Textile World

ESTABLISHED 1868

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Editor: DOUGLAS G. WOOLF

"Well, What of It?"

THE country is now catching its breath . . . and a breath-catching period is always a critical stage. There is the danger that breath will be caught too easily and too completely, and that lethargy will return; on the other hand, a continuously breathless condition is unpleasant—and even dangerous.

In between puffs, one looks back at a financial crisis which was met and overcome; at an economy program which accomplished in a few days what legislators had dodged for years; at a demonstration of vigorous leadership which brought all political parties at least temporarily into one fold.

Still puffing, one surveys a farm relief bill which can probably claim an all-time record as an amazing hodge-podge of economic absurdities. Advanced frankly as an experiment, it certainly qualifies as one—and as a dozen or two more.

With an accelerated puff-velocity, one looks ahead to a summer-haze of 3.2 foam and Viennese waltz strains.

▼

Well, what of it?

That question has been put to us over and over again in the last few weeks. It has been asked by men who, possibly, do not like waltz-music. It has been asked by others who merely know that their "business isn't any better." It has been asked by many who wonder what is going to be done to relieve those who relieve the farmers.

"Well, what of it?" is a perfectly pertinent question. The answer is: "A lot."

The stage is set for action. People are in the mood to start living again. They have come to recognize the anomaly of a great nation, with unlimited resources and high individual "intelligence quotients," yielding to poverty and to fear.

From a practical standpoint living again means buying again. And buying again means selling again.

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To the textile manufacturer, supplying a basic need, this in turn means opportunity. The creed which has been preached, largely ineffectively, during these dark years, may now be practiced.

The day of the chiseler—whether his specialty be quality, prices or wages—has passed. He may not know it but he will soon find it out.

Believe it or not, there are still people left with money or credit enough to buy the sorts of things they want—and to pay fair prices for them. Now that they realize the world is not coming to an end, they will do just that. And, as they buy, more and more people will be put to work making and selling and servicing the things that are demanded and purchased.

But the speed of this trend will depend upon the seller. Whether he is offering a highly styled line direct to the ultimate consumer, or is turning out gray goods for undefined markets, the degree of his merchandising aggressiveness and sanity will determine his own success, and—in the aggregate—the rate of our national recovery.

Governmental leadership has helped—and will continue to help, even though it may hurt some, too, in the process. But there is a very definite limit to that form of assistance. Beyond that limit, Mr. Textile Manufacturer will have to supply his own answer to his question, "Well, what of it?"

The Editor Says:

IT IS unlikely that textile selling methods will undergo a sudden transformation as a result of the decision of the Supreme Court of the United States in the Appalachian Coals case. In the first place, we already have selling organizations somewhat similar to the one which is at issue. For our industry to go further in this general direction, there must first be re-kindled some of the co-operative urge which led, for example, to the formation of the Cotton-Textile Institute seven years ago, and which has been dissipated so sadly during the emergency. Eventually, we believe, something in the nature of the "clearing house" idea, let us say, may be developed; first must come the will to develop it. Meanwhile, loose interpretation and hasty action should be avoided. . . . It is in the broader implications of the decision that we are most interested just now. We do not see how it can fail to be interpreted as a substantiation of a claim which has been made by leading industrialists over a period of years. What could be clearer than the following statement?: "The fact that the correction of abuses may tend to stabilize a business, or to produce fairer price levels, does not mean that the abuses should go uncorrected or that co-operative endeavor to correct them necessarily constitutes an unreasonable restraint of trade." In other words, monopolistic attempts to boost prices are not the only form of unfair competition; ruinous price-cutting is equally a menace and demands co-operative restraining efforts. . . . The Supreme Court does not say to industry: "Go ahead and fix prices." It *does* say that the anti-trust laws were not intended to make impossible "the adoption of reasonable measures to protect it from injurious and destructive practices and to promote competition on a sound basis." Used wisely, this decision can serve as a ladder by means of which depressed industries may climb out of the morass.

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WE THINK it safe to say that co-operative effort, in the textile industry, is right now at a low ebb. There are exceptions, of course, but by and large, despite heroic efforts on the part of the paid executives, the organizations in the field are just about staggering along. The causes are many: decreased revenue from dues; absorption of individual manufacturers in their own pressing problems; and the effect of the fog of national despair which did not start to lift until March 4. . . . We also think it safe to say that aggressive leadership, through coordinated agencies, will be needed more during the period of reconstruction, on which we have just embarked, than ever before. If the so-called law of the survival of the fittest were really a law, it might have been expected to operate during the last three years. It didn't. It never will—that is, in the way its proponents claim. It may weed out certain companies and certain men, but it also prepares the ground for a new crop of weeds. . . . In utmost seriousness, we urge that steps be taken to strengthen associations and institutes, to support the paid executives, to increase their financial resources, to expand their personnel, and to re-polish their programs which have become tarnished from lack of use. This will require, as always, the special effort of a relatively few leaders in each branch of the industry. Bright is the prospect of reward for such effort.

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THE Silk Association, at its annual meeting, endorses Federal legislation forbidding the employment of any person in industry more than 30 hours a week during the existing emergency. . . . The Ballard Silk Co. and its employees appeal to the Secretary of Labor and to Senators and Representatives to "aid and support any bill proposed which will favor the legislation and enforcement of an eight-hour day, five-day week, and complete elimination of night work, in the textile industry. . . . That is progress—and we say this as one who opposed the Black 30-hour bill. It reveals that more and more thought is being directed toward a subject on which the textile industry has been far too inarticulate. We doubt that we will have a 30-hour work-week. But eventually, we hope, we will have shorter hours in textile manufacture, and uniformity among producing States. The steady increase in the number of advocates of this cause, in the industry, is a good omen.

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WE HAVE a professional interest in any collection of words which occupies little space but means a lot. If the following statement from a market-letter issued by Scheuer & Co. doesn't pack a literary wallop, we are willing to be fired for poor editorial judgment: "We incline to the view that any inflation, regardless of type, controlled or uncontrolled, which does not reach to the wage scale, and which does not directly increase employment in a large way, is not worth the risks involved and will prove to be unsatisfactory. We are not so much given to the theory that under prevailing conditions the supply of money alone, and in itself, will bring about the widespread improvement which should come from a substantially higher price level."

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NOW that we have started to quote others, we yield to J. H. Connors, of the B. F. Goodrich Co.: "The nemesis of quality is The Chiseler. . . . The debasement of quality can only mean the lowering of performance standards and a deeper drain upon incomes—the major variable cost-factor that still remains. Which means in turn the flight of consumer purchasing power and unfortunate social consequences. Here at Goodrich we believe The Chiseler can no longer be permitted to speak for American industry—which sells, as well as buys. We believe his voice will soon be submerged in a veritable clamor of voices, until now strangely silent, demanding recognition for quality on a record of concrete, constructive performance." . . . American industry *sells*, as well as *buys*. Mr. Connors, you said a mouthful!

❖

"AS ONE turns over the pages of the TEXTILE WORLD's annual review and forecast number," comments the New York *Times* editorially, "it is evident that a new spirit animates the most conservative of industries. Perhaps the lean years made it necessary to invoke the aid of the laboratory. Whatever the reason, probably more progress has been made in textiles in late years than in the last half century." . . . After describing many of the new products developed, the *Times* concludes: "It is good to read of such products in times like this. Factories are not quite stagnant. Industrial science is abroad, still achieving, still pursuing. And romance! We find it in the pages of a technical journal, perhaps the last of all expected places, to remind us that business is a great adventure of discovery as well as a matter of dollars and cents."

"Boom" Deflated . . .

BUT SOUNDER PROGRESS IN THE MAKING

IN ONE sense, the textile industry got all dressed up last month and then found it had no place to go. During the period when banks, exchanges, and, in fact, everything except hopes, were on vacation, hopes worked overtime. There were fancy dreams of a boom in the making. Solemn warnings against undue speculation were heard—but most of the warners really had their tongues in their cheeks; they wanted a little speculation, and had every intention of getting in on it.

Then came the cold, gray dawn. A brief flurry followed the opening of the exchanges, and an anti-climax followed the flurry.

Up and Down Again

Here is an example: Cotton, October delivery, closed on the New York exchange March 3 at 6.60c. On the re-opening day, March 16, it closed at 7.18c. On March 31, the closing price was 6.61c. Similarly, Japan 13-15 silk, 78%, was quoted at $1.18-1.23 on March 3; $1.23-1.28 on March 16, and $1.16-1.21 on March 31. Wool fared better: fine staple territory was 43½c. on March 3; the same on March 16; but had risen to 45c. on March 31.

Cotton goods reacted more or less in sympathy with the raw material. Print cloths, 38½-in., 64x60, 5.35, were quoted at 3c. on March 3; 3⅜-½c. on March 16; and 3 1/16-⅛c. on March 31. Carded yarns held more of their gain; 20/2 warps were 13½-14c. on March 3; 16-16½c. on March 16: and 15½c. on March 31.

Sales reacted as did shipments. Near-feverish activity in gray goods during the "holiday" was followed by comparative quiet in the latter part of the month. A spurt or two in some sections of the textile markets—such as the flurry in sand crepes—merely accentuated the prevailing calm, by contrast.

However, in another sense, the textile industry at the end of March was really acting as if it had some place to go—and intended to go there. It may have to take off its dinner-clothes, which it donned shortly after March 4, and put on overalls—but that is all to the good.

As we write this, we sense an air of hopefulness and determination which contrasts with that of despair, so long prevalent. This new spirit is based on the belief that the worst is over, and that whatever of grief may come during the next few months as some banks open on crutches and others stay closed, will be nothing in comparison with the catastrophe which was threatening prior to March 4. It is based, furthermore, on the realization that the crisis definitely halted another stage in the degeneration of textile prices; it is unthinkable that this collapse should resume. Even the rayon price-cut early this month did not destroy this hope.

The new courage is reflected in the curtailment policies adopted by broadsilk manufacturers, rayon yarn producers, and others; in the stiffer price resistance shown in so many sections of the market; and in the plans being laid by many firms to sell, and sell aggressively, but to insist upon a profit.

There are, of course, many uncertain factors—and these explain, to a considerable extent, the deflation of the incipient "boom."

Probably the greatest source of hesitation has been the farm relief legislation, pending during the period under review. Manufacturers, irrespective of their political faith, have hailed the various acts of the new Administration and have welcomed the leadership demonstrated. They have tried honestly to extend this admiration to the farm bill—but have failed. As we write this, the issue is still unsettled; until at least the worst is known, textile markets will lack assurance. . . . More about this, elsewhere in this issue.

The unexpectedly rapid progress of the Black 30-hour bill threw another element of uncertainty quite suddenly into the picture. In the first week of April, increased buying of gray goods was attributed to expectation that higher prices would result if the legislation were enacted. The ultimate disposition of this bill was still in doubt when this issue went to press.

The credit situation has been and is another serious problem. The noise of bouncing checks is not conducive to composure among salesmanagers. Gradually, this condition will be cleared up; until it is, it will be a source of uncertainty.

Then, too, the banking holiday and its aftermath—despite the many constructive results produced—took some important weeks out of the spring season in many lines.

A Crucial Period

This latter fact has led many in the trade to believe that expansion of business must come quickly—and that, if it does not materialize within the next month, relative quiet may be anticipated until late summer or early fall. Consequently, we sense, as we write this a feeling that the immediate future is what baseball writers describe as "croocial." In fact, we shall follow developments between now and the time this appears, with some uneasiness, as we are conscious that much may happen in the interim to change the picture.

Our net conclusion is (1) that the trend of textile prices during the next several months will be upward, but moderately so; and (2) that our previously-expressed anticipation of a somewhat higher volume of textile activity in 1933, as against 1932, has been reinforced by the developments of the last month.

Washington Impressions

EARLY this month we had an opportunity, as one of a small group of business paper editors, to get a flash picture of the new Administration . . . . . A call at the White House; conferences with several of the Cabinet officers and with the Director of the Budget; dinner with a member of the "brain trust"; and some time in the Senate and House galleries.

It's a good crowd. The atmosphere is inspiring. Things are being done. The "experimental" attitude does not frighten us. Mistakes will be made but, we believe, they will be corrected as they become apparent.

Official Washington has adopted a new word: "realistic." It came at us from all sides. It implies that facts are being faced. No one can object to that.

Some personal impressions: No one can see the President for even a few minutes without capitulating to his charm, his sincerity, and his frankness. He does not parade the great burden he is carrying. His personality is the key to the "new deal" . . . . . Miss Frances Perkins—addressed as "Madame Secretary" by the way—will prove to be, in our opinion, one of the great Labor Secretaries of history. From a masculine standpoint, we regard her as one of the best "men" in the Cabinet . . . . . Despite our honest difference of opinion with Secretary of Agriculture Wallace, he impressed us as sincere to the point of fanaticism. An ardent spokesman for the farmer, naturally, but apparently not unconscious of the needs of business. Textile manufacturers should get to know him; he doesn't bite . . . . . Secretary of Commerce Roper has a tough economy job to perform. We fear for the Bureau of Foreign and Domestic Commerce, but like the way the Secretary is inviting suggestions. More about him elsewhere in this issue . . . . . Budget Director Douglas is a wonder. Both feet on the ground; brain working all the time; a real man . . . . . Due probably to an inferiority complex, the thought of dining with a member of the "brain trust" provoked anticipation of nervous indigestion. The fears were groundless, he was a charming dinner companion. Here, too, we found ourself in disagreement with him on some points but recognized his sincerity.

Congress was a different body from the aimless lame-duck group we watched in inaction two months ago. Speeches were being made to men, not to empty chairs. There was an air of accomplishment, and of joy in accomplishment, in each House.

Truly, it's a *national* Government just now . . . . . And we are confident the national interest will be served.—*Editor.*

Farm Relief

WE SUBSCRIBE to the sentiment that class interests must be subordinated to the national interest during the present drive toward recovery. No program, however honestly conceived, can straighten out the economic mess with complete equitableness to all groups and all individuals. Temporarily, at least, some must yield more than others.

We have the highest admiration for the way in which the Administration has approached the problem. A degree of courage, ability, sincerity, and leadership has been shown which promises, to this observer at least, a way out.

Consequently, if—as seems probable at this writing—final farm relief legislation follows broadly the plans contained in the Administration's bill, textile manufacturers will have to take it—and like it. Any disposition to permit resentment over this particular legislation to destroy confidence in the broad plans of the new Government would be inimical to the national interest—and consequently to the interest of every textile manufacturer.

Nevertheless, since the bill was advanced as an experiment with promise of quick revision to meet faults uncovered, it is essential to keep in mind certain weaknesses underlying it and to call the inevitable manifestations of those weaknesses to the attention of the Administration as time goes on—not in a spirit of criticism, but in one of helpfulness.

In the first place, we believe that noise has elevated farm relief to a position out of proportion to its true place in the economic situation. Needless to say, we agree that a sound agricultural economy is essential. But we also hold that a sound industrial economy, a sound commercial economy, a sound financial economy, are essential. Nor do we think that business, industry, and finance can be made sound by heroic agricultural measures. Nor do we believe that the farm group is in more dire straits today than is any other class. The voice of farm blocs—more articulate than that of textile workers, or of coal miners, or of stenographers—has created the contrary illusion, just as the veterans' blocs did until President Roosevelt stopped that raid.

Second, we think the idea of promising a return of farm prices to a parity with 1909-14 levels is unsound. There is no reason why any of us, no matter what our walk of life, can expect or demand a return to parity with that period or with any other period.

Third, we believe the hope of regulating production in a thoroughly decentralized agriculture is a false one. If prohibition enforcement was difficult, this other type of enforcement will be found to be infinitely more so.

Finally, proponents are claiming that the agreement sections of the bill will enable textile manufacturers to "get together" without fear of the anti-trust laws. Frankly, we believe the hope thus held out is specious.

So much for the negative side.

We still feel, as we said before, that textile manufacturers and others adversely affected by the legislation must cooperate to the fullest extent with the Administration. It is superfluous to say that both the President and the Secretary of Agriculture will attempt to administer the law with the utmost regard to the interests of all. They will need help, not antagonism.—*Editor.*

Farm Bill

By Paul Wooton
Washington Correspondent
TEXTILE WORLD

SUPPORTERS LOYAL TO PRESIDENT BUT LUKEWARM ON MEASURE

THE farm bill was reported favorably to the Senate April 5, without important change. Drastic changes would have been made by the Senate committee had not the President exerted the full weight of his influence to get the House bill before the Senate. The only important change made was the elimination of sheep and cattle from the list of farm products. A price-fixing alternate for the allotment plan also is included in the Senate bill. The President's farm mortgage plan was added to the bill by the Senate committee.

Many of those in Congress who supported the farm relief bill did so because they were anxious not to break away from the President rather than for any particular conviction that the legislation is wise. Perusal of the speeches of those who voted for the measure is all that is necessary to establish that its supporters were more anxious to explain their position than to attempt to justify such a measure.

In the face of surprising discourtesy processors and middlemen who appeared before the Senate committee did not have great difficulty in establishing that they are in no position to absorb the tax and that it must be passed on to the consumer or passed back to the farmer.

One of the reasons why there was not more insistence upon the right to amend the bill in the House was the fact that many members did not want the measure changed; if approved in form submitted it would be easier to put the blame entirely on the Administration.

Another of the difficulties encountered by Congress was that it was too late in the season to secure acreage reduction contracts from cotton growers. To meet that the suggestion was made that every third row of cotton could be plowed under. Thus another theory that had been ridiculed previously came in for serious consideration. It also was apparent on Capitol Hill that the leaders of the farm organizations do not represent farm sentiment. While they were advocating price-fixing, or the Administration's measure, letters being received indicated that no less than 70% of the farmers were against any new-fangled scheme.

The principal objections urged against the proposition were that it does nothing to remove or decrease the burden of high import tariffs, which make it difficult to export and imposes a supersales tax on the barest necessities of life. There was objection to the granting of broad powers to a Government bureau and to any measure that gives Government control over private enterprise. Vesting of arbitrary authority in a government official destroys confidence, creates uncertainty and results in a greatly reduced volume of purchases. Many contended that farmers cannot be made prosperous by restricting production. The outcome of restriction measures in the past invariably has been disastrous. There was little confidence in the men who actually drafted the measure. Soviet-like control of farming would be resisted by the farmers themselves. It would be impossible to maintain any particular relationship between agricultural prices and the prices of other commodities. Administrative costs, difficulty of enforcement and the uncertainty as to results were other arguments.

With regard to cotton option contracts it was felt that farmers would resent being told what acreage should be planted to cotton. There was doubt as to the possibility of securing a reduction in the total production. The plan is no more likely to succeed than other speculative propositions, such as the Farm Board plan and the 16-cent loan policy of 1929. There was objection to the cancelling of the $63,000,000 net debt owed by the American Cotton Cooperative Association. The plan assumes the optimistic theory that failure is impossible.

Much of the opposition was based on the original proposal that the Secretary of Agriculture might tell middlemen what prices they should pay for cotton; that they could buy only a certain portion of the cotton produced by the individual farmer who would not agree to reduce his production; that cotton would have to be sold to mills at prices prescribed by a Government official; that profits and charges could be limited.

There was much doubt as to the constitutionality of the plan. This applies particularly to the provision of imposing a tax on the processor to be paid over to the farmer and to the provision for the granting of licenses to shippers or processors. Another objection advanced was that the Treasury would lose many millions of dollars if the tax should be declared unconstitutional.

•

The Black Bill Surprise

With dramatic suddenness, the Black 30-hour bill regulating the length of the work-week and the work-day in connection with products entering inter-State commerce, claimed part of the spot-light in the first week of April. While it had previously been considered that the odds were against passage of the measure, it became apparent, almost over-night, that the reverse was true. Vote was reached in the Senate April 6, and the bill was passed 53–30. Senator Robinson's amendment to extend the limit to 36 hours, was defeated 48-41.

As we go to press, the final fate of this legislation is uncertain. Action in the House will depend upon Presidential approval; there is some doubt as to his attitude but prospects favor eventual passage of some sort of a bill in this direction. As it is a criminal statute, consideration can be expedited and a Supreme Court decision is possible in nine months.

The ramifications of such a measure are so diverse that industry has not yet adjusted itself, at this writing, to its possible implications. It is safe to say, however, that it would be potential of more far-reaching effects upon industry than any other measure thus far enacted or even proposed.

Daniel Roper

BRINGS TEXTILE BACKGROUND TO COMMERCE DEPARTMENT

The new Secretary of Commerce

Harris & Ewing

AN UNDERSTANDING friend of the textile industry has been placed at the head of the Department of Commerce in the person of Daniel C. Roper. Coming from the cotton-producing and textile manufacturing State of South Carolina, he grew up in a textile atmosphere. Because of his knowledge of cotton growing and cotton manufacture Mr. Roper, early in his career in the Government service, chose work which allowed him to employ that knowledge.

When the Democrats organized the Senate after Grover Cleveland's election in 1884, General Matthew C. Butler, at that time one of South Carolina's Senators, was made chairman of the Committee on Interstate Commerce. On the same day he was chosen for that post he telegraphed Mr. Roper to come to Washington to serve as clerk of that committee.

Before he went to Washington Mr. Roper had heard much in his native State as to the alleged unfairness of the statistics and estimates covering cotton issued by Neill Bros. in London. This firm compiled the only cotton figures gathered at that time. Charges frequently were made that the figures and estimates were colored in the interest of the foreign spinners. Young Roper had a bent for statistics and even in that day was convinced that they should be employed to a much greater extent in the conduct of business. For that reason he followed the work of the Bureau of the Census closely. He talked over statistical problems with the bureau director. He called to his attention the need for statistics from an official source which could not be successfully questioned and which would be issued promptly.

This resulted finally in an offer from the director of the Census Bureau to Mr. Roper to put in the type of fact-finding which he had been championing. There was much doubt in the bureau as to the possibility of getting the reports from thousands of widely separated gins in time to issue a prompt report. There also had been sporadic attempts to have information concerning cotton production gathered by the regular Census enumerators. In gathering the census of 1900 the enumerators again attempted to get figures on cotton production.

Mr. Roper personally decided to check their work in two counties in South Carolina and two counties in North Carolina. Earlier in his life he had sold insurance in those four counties and was acquainted with practically every resident. He knew that many of the gins would not be recognized as such establishments when they were not in operation. Many of them were used for the storage of vehicles and farm implements and had no outward evidence of the use to which the building was put during the cotton season. For that reason the enumerators had missed one-quarter or more of all gins. With that proof in hand he was able to show conclusively the need for a thorough-going report covering the output of all cotton gins.

While this was before the development of cotton growing in the Southwest, it was an undertaking of no small magnitude to be sure of securing, within eight days, a report from every gin in the whole area from Queen Ann county in Maryland to the western counties of Texas. It was done, however, with such success for two years that Congress then provided for the report to be made periodically during the marketing of the crop so that accurate information could be obtained as to several dates.

From the small beginning made by Mr. Roper in 1900, the Bureau of the Census has gradually expanded its statistical activities until now it presents a timely and complete picture of the whole supply and distribution of cotton.

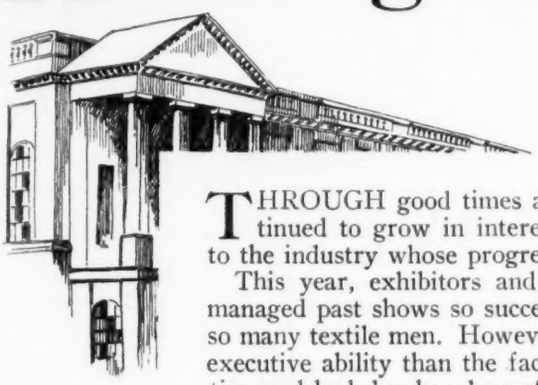
Since 1912 the Census Bureau has furnished a monthly report of cotton consumption and stocks held. This report also shows the number of active spindles. In 1924 the number of ginning reports was increased from 10 to 12 per season.

Secretary Roper thinks that it was his work on cotton statistics which launched him in politics. His knowledge of cotton manufacture led to his being drafted by the Ways and Means Committee as its cotton specialist in the formulation of the Underwood tariff bill. Within the limitations of the instructions given him by the committee he drafted the cotton manufactures schedule in the Underwood act. It was that work which called him to the attention of A. S. Burleson, who later became Postmaster General and selected Mr. Roper as his First Assistant Postmaster General. Later he became vice-chairman of the Tariff Commission and then Commissioner of Internal Revenue in the period during and following the war, when Uncle Sam collected more taxes than at any other period in history.

TEXTILE WORLD GUIDE TO

Knitting Arts Exhibition

AT PHILADELPHIA

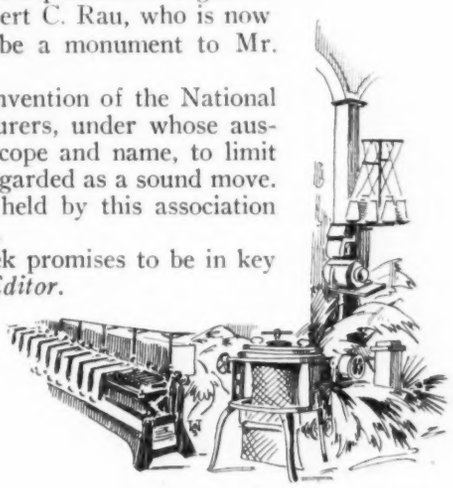


THROUGH good times and bad the Knitting Arts Exhibition has continued to grow in interest and in significance. Its virility is a tribute to the industry whose progress it portrays.

This year, exhibitors and visitors will miss Chester I. Campbell, who managed past shows so successfully and whose recent death was a shock to so many textile men. However, there is no greater proof of Mr. Campbell's executive ability than the fact that he had perfected a permanent organization and had developed an efficient understudy, Albert C. Rau, who is now carrying on. The 1933 exhibition will prove to be a monument to Mr. Campbell's organizing genius.

Particular interest is attached this year to the convention of the National Association of Hosiery and Underwear Manufacturers, under whose auspices the show is held. The proposed change in scope and name, to limit its activities to the hosiery industry exclusively, is regarded as a sound move. Furthermore, the unusually successful conference held by this association last fall strengthened its standing with its members.

From every standpoint, this year's Knitting Week promises to be in key with the new spirit of hopefulness now with us.—*Editor.*



WITH the need of equipment replacement active in the minds of knitwear manufacturers, especial interest focusses this year on the program for Knit Goods Week in Philadelphia. Knit Goods Week opens in the Commercial Museum, at 10 a.m., Monday, April 24, and continues until 5 p.m., Friday, April 28. Daily hours are 10 a.m. to 10 p.m. As usual, the two highlights are the 29th. annual Knitting Arts Exhibition, and the annual convention of the National Association of Hosiery and Underwear Manufacturers, which will be held Thursday, April 27.

The board of directors of the hosiery association will meet at Manufacturers Club, Wednesday, April 26, at luncheon. The association's annual meeting will be called to order in the lecture hall of the museum at 11 a.m., Thursday. The program will include: address by the president, William Meyer, president of Apex Hosiery Co., Philadelphia; financial report by the treasurer, Ernest Blood, of John Blood & Co., Philadelphia; and the report of the managing director, Earl Constantine. Annual luncheon will be held at 1 P.M. the same day.

Descriptions of the booths at the Knitting Arts Exhibition, are given on this and the following pages. In the report of each individual exhibit which has been announced is a list of the products which each exhibitor has chosen to display on this occasion.

Aberfoyle Mfg. Co., Philadelphia. Booths 242-244, 271-273. Featuring Aberfoyle Durene.

Adamson Bros. Co., New York. Booths 342, 343, 369, 370. Lastex yarns, fabrics, and finished merchandising.

Adelphia Textile Co., Philadelphia. Booth 338. Tram, spun-silk, and mercerized yarns for hosiery; natural and dyed looping and seaming threads.

American Aniline & Extract Co., Inc., Philadelphia. Booth 85. Textile chemicals.

American Bemberg Corp., New York. Booths 250, 251. Yarns and fabrics from Bemberg. Featuring three new yarns—Sunspun, a spun Bemberg yarn with fine multi-filament structure and natural subdued luster; Lintella, a high-denier, no-twist yarn; and Matesa, a dull yarn for giving dull, rich-surface fabrics.

American Enka Corp., New York. Booths 168, 169. Viscose-process rayon yarn. Featuring knitted fabrics and garments made from Enka yarns including Lingees, Perlglo, and Englo.

American Glanzstoff Corp., New York. Booths 294, 321. Lion brand rayon yarns, and fabrics made therefrom.

American Laundry Machinery Co., Cincinnati, Ohio. Booths 226-228. Featuring the American Super rotary hosiery dyeing machine and the American Silk Impregnator for silk soaking.

American Thread Co., New York. Booths 264, 265. Cotton and mercerized threads for all purposes.

American Wool & Cotton Reporter, Boston. Booths 15, 16. Textile publishers.

American Yarn & Processing Co., Mt. Holly, N. C. Booths 319, 320. Mercerized yarns.

Edward R. Ammon, Reading, Pa. Booth 11. Hosiery inspecting equipment. Featuring new full-view inspecting machine with mirror attachment which eliminates turning of the form.

Arap Sales Corp., New York. Booth 326. Sole distributors for Frank W. Gorse Co. Covered cut-rubber yarns for weaving and knitting.

Arrow Needle Co., Manchester, N. H. Booth 71. Latch needles.

Atwood Machine Co., Stonington, Conn. Booths 308-309AA. Throwing machinery including Stonington winder, 5B doubler-twister, Monarch twister, and Utility twister.

Bausch & Lomb Optical Co., Roches-

ter, N. Y. Booth 152. Optical instruments for textile mill and laboratory including microscopes, pick and course counters, etc. Featuring projection instrument for determining fiber diameters and lengths, textile projector for studying fabrics, and equipment for inspecting spinnerets.

Boger & Crawford, Philadelphia. Booths 237, 238, 277, 278. Mercerized yarns.

H. Brinton Co., Philadelphia. Booths 164-166, 205-207. Circular knitting machines. Featuring two outerwear and one bathing suit machines, and three hosiery ribbers.

H. W. Butterworth & Sons Co., Philadelphia. Booths 283, 332. Featuring Ultra package dyeing machine and four-string piece dyeing machine of Haveg.

Cannon Mills, Inc., Philadelphia. Booth 190. Cotton and mercerized yarns.

Clifford & Lawton, Inc., New York. Booth 90. Textile publishers.

Clover Leaf Mfg. Co., Honesdale, Pa. Booth 365. Silk and rayon bobbins, pin boards, and steaming crates.

College Maid Shop, Maryville, Tenn. Booth 77. Uniforms for office girls and mill operatives.

Consolidated Lithographing Corp., Brooklyn, N. Y. Booth 143. Box wraps, bands, and labels for hosiery and other knit goods; window transparencies, decalcomanias, and cut-out display signs.

Charles Cooper Co., Inc., Bennington, Vt. Booth 141. Knitting needles and fabrics knit on Cooper circular spring-needle rib machines. Featuring large variety of designs and patterns now possible in Cooper spring-needle rib fabric.

Cotton, Atlanta, Ga. Booths 364, 365. Textile publishers.

Crawford Mfg. Co., New Brunswick, N. J. Booth 347. Automatic stop-motions for knitting machines, spring-beard knitting machine needles, sheet-metal pressings, sinkers, slides, jacks, transfer points, quills, sley points, guides, and full-fashioned needles and sinkers.

J. D. Cunningham, Philadelphia. Booth 10. Double-Karded knitting yarns, bleached, dyed, and natural.

Davison Publishing Co., New York. Booths 73, 74. Textile publishers.

Delaware Rayon Co., New Castle, Del. Booth 329. Rayon yarns.

Dixie Mercerizing Co., Chattanooga, Tenn. Booths 135, 136. Mercerized yarns.

Dubied Machinery Co., New York. Booths 194, 195. Featuring new full-automatic, high-speed, links-and-links jacquard machine in operation.

John Dunlops Sons, Inc., New York. Booth 335. Thrown silk, hosiery and other knitting yarns.

Duplan Silk Corp., New York. Booths 192, 193. Thrown silk and rayon.

Du Pont Rayon Co., New York. Booths 197, 198, 221, 222. Fabrics and garments made from Du Pont synthetic yarns.

Durene Association of America, New York. Booths 196, 223. Durene merchandise from 35 different manufacturers including outer and underwear fabrics and garments, hosiery, gloves, etc.

Electric Power Construction Co., Philadelphia. Booth 267. Duo-Stat temperature control for buildings; power-factor corrective equipment; maximum demand Limitor for limiting demand on central-station electricity and steam service; and primary switching and transformer equipment.

Ewing-Thomas Corp., Chester, Pa. Booth 12. Mercerized yarns.

Fairchild Publications, New York. Booths 383, 384, 421, 422. Textile publishers.

W. F. Fancourt & Co., Philadelphia. Booth 140. Textile soaps, oils, and specialties. Featuring a new product for waterproofing and delustering hosiery in one operation, a delustrant for silk and rayon hosiery, and a new scouring oil which permits the use of hypochlorite in the scouring solution.

Fidelity Machine Co., Philadelphia. Booths 137-139, 184-186. Complete line of Fidelity universal ribbers in operation. Featuring improved five-color yarn changers applicable to all Fidelity machines and many other types.

Carl Fiebel, New York. Booth 99. Steam pressing machine for knit goods.

J. A. Firsching, Utica, N. Y. Booths 322, 323. Knit-cloth slitting machine, strip cutting machine, and special devices for spring-needle machines. Featuring new multiple collarette cutting and winding machine designed to cut a number of spiral strips of one or more widths from tubular fabrics.

Fletcher Works, Inc., Philadelphia. Booths 120, 121. Throwing machinery, including Model 33 twister demonstrating the advantages of Unit Control, improved Duplex doubler-twister equipped with Oilwell spindles, and 30-in. Junior extractor.

J. B. Ford Sales Co., Wyandotte, Mich. Booth 285. Textile chemicals employed in scouring, bleaching, and dyeing. Featuring a new product particularly applicable for scouring raw wool and wool yarns and fabrics.

Foster Machine Co., Westfield, Mass. Booths 149, 150, 174. Silk and rayon cone-winders. Featuring fixed or gear gainer parts, dry and wet winding and cone attachments for all tapers, traverses, and winds.

Franklin Needle Co., Franklin, N. H. Booth 124. Latch needles, sinkers, jacks, and points.

General Electric Co., Schenectady, N. Y. Booth 266. Gear motor, capacitor motor, contactor switches for control of small motors, Thrustor, heating units, Glyptal products.

General Electric Vapor Lamp Co., Hoboken, N. J. Booths 248, 249. Latest models of Cooper-Hewitt lighting equipment for textile mills.

Gerrard Co., Inc., Chicago. Booths 330, 331. Wire-tying machines. Featuring new Model Q semi-automatic machine.

Frank W. Gorse Co., Needham Heights, Mass. Booth 326. See Arap Sales Corp.

Grand Rapids Textile Machine Co., Grand Rapids, Mich. Booths 105, 117. Equipment for tubular knit goods dyehouse including scouring, fulling, and dyeing machines; collapsible dyehouse truck, extractor loader, dyehouse needles, etc.

Grosser Knitting Machine Co., New York. Booths 298, 299. Specialty knitting machine in operation; fabrics and hosiery showing recent developments in knitting.

Grove Silk Co., Dunmore, Pa. Booth 72. Display showing modern methods for testing hosiery tram in a throwing plant.

Hampton Co., Easthampton, Mass. Booths 274, 275. Knitting yarns.

Oscar Heineman Corp., Chicago. Booths 182, 183. Silk and rayon knitting yarns.

Hellwig Silk Dyeing Co., Philadelphia. Booth 154. Samples of fine-gage, ingrain hosiery, resist-dyed silk, boucle yarns, and novelty fabrics processed in the piece.

Hemphill Co., Pawtucket, R. I. Booths 212-214, 253-255. 70-gage wrap- and horizontal-stripe machine; 60-gage color-within-color wrap-stripe with 24 color feeds, 72-move pattern drum, and three-color clocking; combination 12-step and Universal-stitch machine equipped for mock wrap, float, or mesh with reverse plate; Spiers English rib with new welt and draw thread attachment, five-color striper, and tipping and plating attachments; improved split-foot machine knitting leg and instep from single cone; two-feed, twelve-step reverse-plating machine with horizontal striper controlled from pattern drum.

John Hepworth & Co., Philadelphia. Booth 167. Hosiery looping machines in operation.

Louis Hirsch Textile Machines, Inc., New York. Booths 95-97, 125-127. Representing Karl Lieberknecht, manufacturer of Kalio machines; Otto Scherf, manufacturer of Scherf needles; and Helios, manufacturer of Helios sinkers, dividers, etc. Latest model Kalio single-unit full-fashioned hosiery machine will be in operation at a nearby mill.

Alfred Hofmann, Inc., West New York, N. J. Booths 188, 189, 230, 231. Samples of SSUJ single-unit stockings.

E. F. Houghton & Co., Inc., Philadelphia. Booths 63, 63AA. Textile chemicals; beltings; and lubricants. Featuring a new type of boil-off oil which can be used in either the one or two-bath process, Vim-Tred a non-skid leather belt, and Sta-Put a new type of lubricant.

Howes Publishing Co., Inc., New York. Booths 103, 104, 118, 119. Textile publishers.

Industrial Rayon Corp., Cleveland, Ohio. Booths 178, 179. Premier rayon, Spun-lo, and Dul-tone yarns.

International Nickel Co., Inc., New York. Booths 75, 76. Corrosion-resistant materials including Monel metal, nickel, and nickel-clad steel for use in connection with bleaching, dyeing, and finishing equipment. Featuring a nickel-clad-steel piece-goods dyeing machine with superstructure of Monel metal.

Loyal T. Ives Co., New Brunswick, N. J. Booth 156. Various types of spring-beard needles, sinkers, jacks, and other special parts.

Jacquard Knitting Machine Co., Inc., Philadelphia. Booths 292, 293. 28-in. Model B Racard with individual control of every needle up to eight colors, twill

or ordinary back, etc.; new Model JH links-and-links jacquard circular machine.

E. W. S. Jasper, New York. Booth 391. Latch and spring needles manufactured by Ernst Beckert and Theodor Groz & Soehne; Pemco dye nets.

Johnston Mills Co., Charlotte, N. C. Booth 229. Durene, combed and carded cotton yarns.

W. H. & F. Jordan Jr., Mfg. Co., Philadelphia. Booth 98. Textile oils, soaps, and specialties.

Kasanoff Tubular Machines, Inc., Brooklyn, N. Y. Booths 82, 83. Featuring a new steaming and finishing machine for tubular knit fabrics with which is combined a drying attachment.

Kaumagraph Co., New York. Booths 162, 163, 208, 209. Lithographed box wraps, transfers, and embossed seals including dye-resist, soluble, and permanent transfers; Berks transfer iron; Tranol, a new Kaumagraph solvent; Texmark, a new stamping ink; and transfer roll holders.

Knit Goods Publishing Corp., New York. Booths 112, 113, 160, 161. Textile publishers.

Laconia Needle Co., Laconia, N. H. Booth 173. Latch needles.

R. K. Laros Silk Co., Bethlehem, Pa. Booths 359, 402. Silk throwsters.

Leighton Machine Co., Manchester, N. H. Booth 371. Circular knitting machines.

Lubriplate Co., New York. Booth 344. Patented system of lubrication.

Wm. A. P. MacKnight, Philadelphia. Booth 286. Cotton yarns.

Malina Co., Inc., New York. Booths 345, 346. Rayon yarns, natural and dyed, on skeins, spools, tubes, warps, cops, and cones; crepe yarns; worsted and zephyr yarns, and novelty twists.

Markem Machine Co., Keene, N. H. Booths 247, 268. Marking and printing machines for printing labels either loose or on boxes; label pasting machines; and cone-sticker printing machine which prints, perforates, and rewinds stickers from a roll of gummed paper.

Masurel Worsted Mills, Inc., Woonsocket, R. I. Booth 317. Fancy yarns including chenilles, ratines, boucles, angora, and cashmere.

C. R. McGinnes, Reading, Pa. Booth 276. Representing W. F. Hofford, Inc., Weissport, Pa., silk throwsters; Ruby Cotton Mills, Inc., Gastonia, N. C., fine, combed peeler yarns; Ranlo Mfg. Co., Gastonia, N. C., Super-Karded yarns; Ingram Mfg. Co., Nashville, Tenn., merino yarns; and Green River Mfg. Co., Tuxedo, N. C., mercerized yarns.

Melliand Textile Monthly, Brooklyn, N. Y. Booth 89. Textile publishers.

Merkel Bobbin Co., Allentown, Pa. Booth 123. Bobbins for silk and rayon throwsters and weavers. Featuring new type Bakelite head for 5B steaming bobbins; variable-weight take-up bobbins and convertible-weight take-up bobbins.

Merrow Machine Co., Hartford, Conn. Booths 389, 416. Overseaming, hemming, overedging, plain crochet and shell-stitch machines.

Clarence L. Meyers, Inc., Philadelphia. Booths 245, 246, 270. Durene yarns—natural, bleached, and dyed; novelty and merino yarns; combed and carded peeler yarns; tram-silk looping and seaming yarns.

James E. Mitchell Co., Philadelphia. Booth 327. Cotton yarns, natural and dyed.

L. P. Muller & Co., Philadelphia. Booth 145. Cotton yarns and knitted garments.

New Brunswick Needle Co., New Brunswick, N. J. Booth 347. See Crawford Mfg. Co.

Onyx Oil & Chemical Co., Jersey City, N. J. Booth 316. Oils and finishing compounds for use in knit goods dyehouses. Featuring Glyceryl sulphates and Aliphatic Ester sulphates, recently developed compounds which practically reach the point of complete sulphonation.

Paramount Textile Machinery Co., Chicago. Booths 146-148, 175-177. Hosiery drying and finishing equipment, looper attachments, and hosiery inspection machines. Featuring new method of hosiery drying and finishing, and special base in regular forms which permits rapid change of forms on table.

Payson Bros., Inc., New York. Booth 239. Converted rayon and novelty yarns.

Peerless Hosiery Dyeing Co., Pleasantville, N. J. Booth 80. Dyed and finished hosiery in various finishes and packings.

Penn Worsted Co., Philadelphia. Booth 153. Novelty yarns.

Permutit Co., New York. Booths 101, 102. Working model of new fully automatic zeolite water softener; single-valve control unit, Ranarex mechanical CO_2 indicator and recorder; samples of zeolite; lantern slides of water-treating equipment and its application.

Geo. B. Pfingst, Inc., Philadelphia. Booth 269. Japan hosiery tram.

Philadelphia Drying Machinery Co., Philadelphia. Booths 224, 225. Electric and steam-heated hosiery drying forms. Extracting, drying, and finishing equipment for raw stock, yarn, and fabrics.

Philadelphia Metal Drying Form Co., Philadelphia. Booths 295, 296. Hosiery drying equipment. Featuring improved variable-heat, electric drying form, and machine for inserting tissue in hosiery.

Max Pollack & Co., Inc., New York. Booth 350. Flat-lock thread, looper yarns, cotton and mercerized sewing threads.

Process Development Co., New London, Conn. Booth 284. Featuring Tornado process of moistening cones for knitting.

Proctor & Schwartz, Inc., Philadelphia. Four booths at right of main entrance. Proctor automatic boarding, drying, and stripping machine in operation.

Reese Button Hole Machine Co., Boston. Booths 348, 349. Featuring Series 101 buttonhole machinery, including Varsity buttonhole machine for sweaters and Royal machine for underwear.

J. E. Rhoads & Sons, Philadelphia. Booths 333, 334. Leather belting and textile straps. Featuring a machine for demonstrating the comparative power losses with various types of belts.

Royersford Needle Works, Inc., Royersford, Pa. Booths 366, 367. Needles, welt hooks, transfer points, narrowing points, sinkers, dividers, etc.

Scholler Bros., Inc., Philadelphia. Booths 128, 129. Soap, softeners, and sulphonated oils. Featuring a combination dull and water-repellant finish.

Scott & Williams, Inc., New York. Booths 260-262, 303-305. Model K spiral with loose-welt attachment for women's hose; spiral HH with attachments for fancy effects in half-hose by means of float thread and imitation wrap; HH machines for infants' half-hose and men's heavy half-hose and boot-length hose; ES embroidered-stitch machine with 36 wrap-yarn fingers. All hosiery machines fitted with gussetoe and square-heel attachments. Circular machines for underwear fabrics.

Sees & Faber Co., Inc., Philadelphia. Booths 78, 79. Hosiery mill specialties, general mill supplies, power-plant equipment and small tools. Featuring Alemite equipment, new coursing pad, eyelet machine for making take-up straps, non-slip winder belt, etc.

Singer Sewing Machine Co., New York. Booths 202-204, 215-217. Sewing machines specially developed for the manufacture of rayon and other knitted garments. Featuring the 71-101 new high-speed machine for producing straight buttonholes, the 99-WSV-59 eyelet-end buttonhole machine, and various models in the 81 class overedging and 147 class flat-bed machines.

Smith Drum & Co., Philadelphia. Booths 2-9. Hosiery dyeing and inspecting machines and skein dyeing machines in operation.

Southern Textile Machinery Co., Paducah, Ky. Booths 351, 352, 360. Dial loopers and cylinder loopers for hosiery, sweaters, berets, etc. Featuring cylinder loopers for joining rib tops to socks and stockings with two-thread elastic overlock stitch mechanism.

Standard-Coosa-Thatcher Co., Chattanooga, Tenn. Booths 287-289. Durene yarns bleached and dyed; natural, white, and dyed sewing threads in soft and silk finish.

Standard Trump Bros. Machine Co., New York. Booths 119-201, 218-220. Five Model 80W half-hose revolving-cylinder individual-needle wrap machines. Three Model H machines—one 160-needle, 70-gage with six-color horizontal striper for infants' hose; one 220-needle with ten-step reverse-plating; and one 200-needle with six-color horizontal striper and wrap vertical effects for Scotch plaids. Two Model L individual-needle-wrap stationary-cylinder machines equipped with 200 bobbins—one 200-needle making all-over pattern using 200 wrap yarns, and one 148-needle for golf hose. Two Bentley Komet machines—one 168-needle for children's socks and ⅛ hose, and one 200-needle for half hose making complete sock with any broad rib and using new plating attachment giving contrast between cylinder and rib stitches.

A. M. Tenney Associates, Inc., New York. Booth 191. Sales agent, Tennessee Eastman Corp. Acetate yarns. Featuring unpigmented types of dull-luster yarns and standard bright yarns in all deniers and various package forms for use by the knitting trade.

Tennessee Eastman Corp., Kingsport, Tenn. Booth 191. See A. M. Tenney Associates, Inc.

(Continued on page 105)

Narrowing Difficulties

CAUSES OF FULL-FASHIONED LOOP DISPLACEMENT AND SLIPPING

By M. C. Miller, M.E.
Mechanical Engineer, Manville, R. I.

◆ *Why does the outer of the needles which receive double loops cause more imperfect narrowings than all the other needles put together? Mr. Miller answers this question and many others in this, his final, article on full-fashioned narrowing. Reference to past articles is unnecessary for a clear understanding of what is discussed here. Beginning in an early issue, Mr. Miller will offer a new series of articles on the formation of full-fashioned selvages, an important subject which is even less generally understood than narrowing.*

IN ORDER to illustrate clearly how the loops of the fabric are affected by the action of narrowing, the accompanying drawings showing the appearance of the fabric in four stages have been prepared. These figures are diagrammatic plan views of a right-hand edge portion of fabric, showing the right-hand selvage with the yarn carrier at the left side of the machine. The thickness of the yarn is purposely shown out of scale —that is, the yarn is represented by only a single line— in order that the position of the various distortions and of the loops may be more clearly illustrated. All four figures show a plan view of the heads or hook ends of the needles at *a* and a plan-view cross-section of the points at *b*. The sinkers and knock-over bits are purposely left out of these views, as to show them would only complicate the drawings and confuse the reader. These fabric diagrams are drawn to scale with the lay of the yarn in the loops and the loop distortion accurately represented, except in a few places where it was thought that a too meticulous copy of the actual fabric might be confusing. Strict attention was given, however, to actual fabric structure in so far as it was thought necessary to permit the reader to follow clearly the lay and position of every bar of yarn.

In Fig. 52 (corresponding to position 6, TEXTILE WORLD, May 21, 1932, page 32) it will be seen that the points *b* have registered with the needles and have entered their respective loops. The cross-sectional area of the point, being considerably greater than that of the needle, results in spreading these point loops, thus shortening the course lengthwise of the fabric. The limit to such loop-spreading depends of course upon the size of the original loops. The loop size is dependent on the gage and must be as small as the particular gage of the machine involved is required to knit. As the point area is made as great as the loop size permits, in order to present as wide and deep a groove to the needle as possible, it follows that the amount and distribution of point metal are dictated by the gage of the machine.

The area of the cross-section of the points is made as great, therefore, as the smallest loop can encompass without permanent distortion. The distribution of this point metal is in accordance with the index distance between sinkers, the point width being 0.001 to 0.002 in. less than the space between sinkers. The depth of the points is of course in accordance with the total metal area after allowing for the determined width. It is very important that the width of the points be as great as possible, but the width alone will be of no particular benefit unless the point groove flares as much as possible. The depth of the groove is also important, as it must be possible for the needle hook to be buried quite fully in the point.

In Fig. 53 (corresponding to position 10, May 21, 1932, page 33, prior to shifting of the loops sideways) the points have moved away from the front of the needles considerably more than is necessary to have their lower curved ends clear the beards of the needles during the later side shift. This is done to pull the yarn *c* in Fig. 52 so that it becomes the length of the yarn *c* in Fig. 53. This lengthening is possible only by the elimination of the loops *d* and *e*, these loops being changed to the relatively straight, taut yarn-formation *e—d*, Fig. 53. Due to this process of loop robbing, the loops *e'* and *d'*, Fig. 52, are drawn up over the heads of their respective needles. As a result the loop *d'* is considerably distorted and up-ended, as shown in Fig. 53, while the loop *d''*, Fig. 52, is also considerably distorted and drawn out of its normal position, as shown in Fig. 53.

Due to the necessity of robbing yarn from the loops *c* and *d*, we can understand why it is desirable during the narrowing to relieve the action of the fabric take-up, as such action, functioning let us say in Fig. 53, would seriously interfere and resist the robbing action of the points as they move away from the needles. It is to be remembered in this regard that the tension of the fabric take-up is not at right angles to the edge needles, but is more in the direction of the arrow shown in Fig. 53. If fabric take-up tension were not relieved at this time, the fabric would draw angularly against the points; and these, being relatively few in number as compared with the usual number of needles in action, would tend to be drawn out of needle alignment and later register.

Previous instalments of this series on full-fashioned hosiery machines and their operation appeared May 31, July 26, Oct. 4, and Nov. 29, 1930; March 21, April 25, July 11, Aug. 8, Sept. 19, Nov. 28, and Dec. 26, 1931; Feb. 13, March 26, May 21, July and Oct., 1932; and January, 1933. Clippings of Mr. Miller's first series of articles on the past, present, and future of knitting mechanism are no longer available, but the articles are all included in Mr. Miller's book, "Principles of Knitting," recently published by the McGraw-Hill Book Co., 330 W. 42nd St., New York.

In Fig. 54 (position 10 after shifting) it will be seen that the points *b* have shifted sideways two indexes. This point-and-fabric shift causes the yarn *c* to disalign the fourth needle as the shift of the point has not lessened the already taut length of yarn *c* necessary. If anything, greater length of *c* yarn is required in Fig. 54 than in 53. It will be noted in Fig. 54 that the *d'* loop is shortened still more and distorted, and that the wale loops on the inner narrowing point *b* are shown curved, as it were, around the fourth needle. Actually, of course, such curving does not exist, these wales being laid over in line with and above the wale of loops on the third needle. Actual superimposed position of the fabric has not been drawn in Fig. 54, as it would serve no useful purpose, would be confusing, and would prevent showing graphically the lay of yarn and loops. Knowledge, however, that this inner point wale of loops will actually pull the fourth needle to the left makes it evident that this needle, which is the outer one of the two needles which later finish the narrowing with two loops each, will be disaligned as shown in Fig. 54.

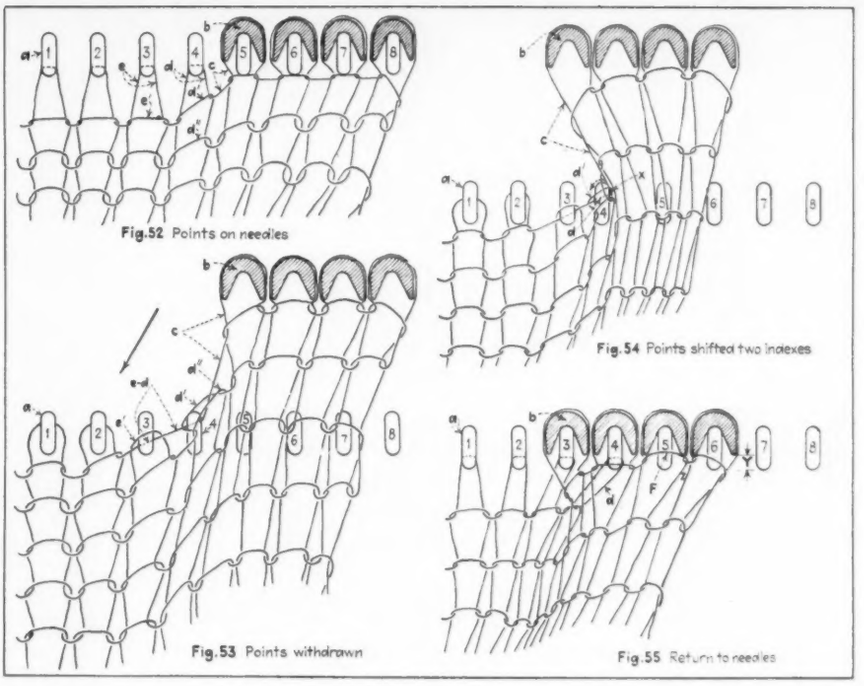


Fig.52 Points on needles

Fig.54 Points shifted two indexes

Fig.53 Points withdrawn

Fig.55 Return to needles

Such disalignment is shown in this figure as only causing the needle head to contact with its adjoining knock-over bit (not shown). Actually, however, the knock-over bits are not stiff and rigid enough to prevent a needle from being further disaligned, which is the reason why the outer of the two double-loop needles causes more imperfect narrowings than all the other needles put together. It is of course theoretically true that, as long as a needle is not disaligned at the time of point register a greater distance than half the width of the flared groove of the point, the point would, upon point-and-needle register, realign the needle. What actually happens, however, is that all point grooves are not so fully flared as is shown in the drawings—neither are they so accurately centered as shown. Also, the beard of the needle is often bent slightly in the same direction as the disalignment, and it should be borne in mind in connection with this matter that the needle beard must be aligned with the groove in the point before the point can register with the needle eye.

All these detrimental factors are liable to be intensified by needle disalignment, particularly if such disalignment is due to fabric tension or distorted loop interference and does not correct itself fully before the register of the points and needles.

It will also be noticed upon examination of Fig. 54, that the loop *d'* over the fourth needle has been forced well over toward the front of the needle hook. If, upon the later movement of the points toward the needles, this disturbed and distorted loop is not again forced over its needle hook and toward the back of the needle, all or part of the loop may, upon the later upward needle movement, pass to the wrong side of the needle and thereby cause an imperfection, as will a slipping to the left of the *x* portion of the loop *d'*.

In Fig. 55 (position 15, October, 1932, page 67) it will be seen that all the loops have again assumed their more nearly correct length and position, assuming that the fourth needle has been realigned correctly by its point. This figure clearly shows how important it is that the needle hooks be fully buried in their point grooves, for if more than about one-third of a needle hook projects outside the point shank as at *y*, either the previous loop head *f* will be forced upward with the rising needle (and thereby distorted or certain of its filaments dislocated) or the needle may come up through the preceding loop. This latter fault results in a non-drop-stitching hole. The resistance to drop-stitching is due to the fact that the previously knitted loops of the wale in which the hole occurs are prevented from running by the needle having come up through a loop, even though the wrong one, resulting, however, in the unlooping of the point loop. Also, of course, if the needle is not properly buried—as, for instance, the fifth needle—it might come up in the position marked *z* in Fig. 55. In this case drop-stitching would result.

It will be noted that the loop *d*, Fig. 55, is again fully formed, whereas in Figs. 53 and 54 it was merely a straight line of yarn. While the reforming of this loop does in the majority of cases follow the incoming of the points toward the needles, this will not be the case if the yarn *c* (Fig. 54) is laid around the head of the fourth needle, as shown by the dotted arrow in Fig. 54. When so laid, the loop *d* will reform around the needle beard and, upon subsequent upward movement, be cast off, permitting not only its own wale of loops to be dropped, but also its inner adjoining wales.

It must not be assumed from all the foregoing that the possibilities of faulty narrowing are in the majority of cases due to the involved factors of loop displacement and slipping just cited. These factors will without a doubt cause a certain percentage of irregular and imperfect narrowings; but the great majority of faulty transfers are the result of point or needle disalignment, particularly the latter.

COMMON SENSE APPROACH SUCCESSFUL IN STYLING

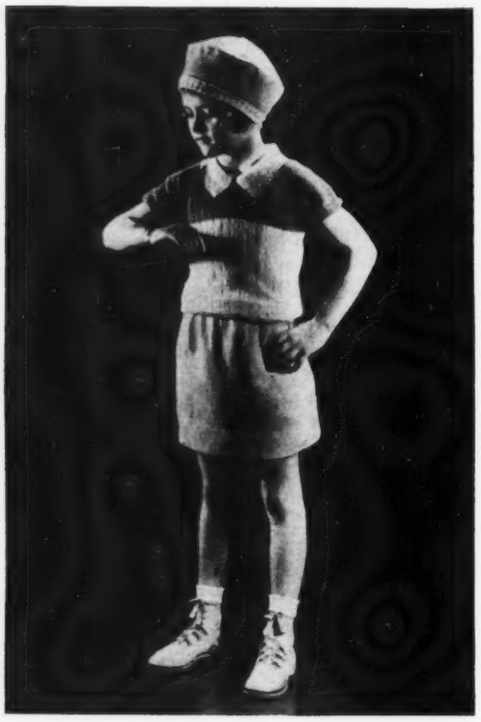
Children's Knitwear

THE use of just plain common sense is a new approach to styling in many fields of styled goods. In fields where it has not already been prominent, it is worth trying. The results have a surprising freshness and attractiveness which are valuable attributes for any line of textiles.

These generalities find their specific demonstration in the spring lines of Simon Ascher & Co., New York. The product is infants' and children's knit goods, and the new styling has been done by Pola Stout, who has created several hundred numbers, new in design and color.

The use of color has been simplified to present a unit effect to the child. No garment has more than three colors in combination and the majority have only two, presented in simple arrangements to avoid any confusion in the child's mind. Styles for layette and infants to three years are done principally in white, pink, and blue, with some use of yellow. Styles from three to six years are done from a line of four basic colors and eight secondary colors. To carry these clear-cut colors, zephyr yarn is used throughout the line, a departure from the previous pompadour yarn (worsted and rayon twist). The zephyr offers clean colors and good durability.

Boys' knitted suit by Ascher



Little girls' knitted suit and beret

A common sense item in the layette line is the use of crocheted wool buttons instead of hard buttons. They are more comfortable to the baby and wash without damage. In the line from three to six years, neutral wooden buttons are used.

Another example of meeting a common problem in children's garments is the new body-conforming cut of the sweater with straight bottom. This design encourages the garment to stay put instead of riding up, as has been a common fault of the straight-side garment with ribbed bottom. The cuffs on sweater sleeves have been made smaller and more dainty. Much thought and ingenuity has been expended on the necks of the garments. The stereotyped crew-necks and V-necks have been avoided and attractive turn-over collarettes designed. On many of the garments the raglan sleeve has been used to give a better line at the shoulder.

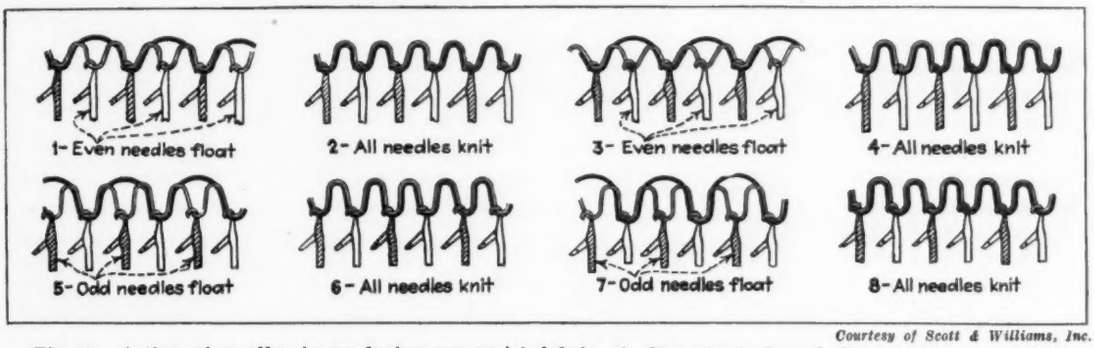
Further evidence of common sense is the omission of the usual duck, rabbit, or chicken decorations. Child psychologists argue that the child is better off to know these animals as living things where they belong, rather than as decorative elements on their dress. A suitable substitute is small geometric designs which are pure pattern and distinctly attractive.

Simon Ascher & Co. has used Lastex for the added comfort and fit of the garments. The designer, Pola Stout, has created a beret, using Lastex, which holds to the head and is adjustable. Lastex is also used for waist lines, in blousing, in pants suits, in sleeves, and at the bottom of the pants to make the garment stay put. Many of these features are shown in the illustrations.

Progressive retailers have already given encouraging support to these new ideas in styling children's knit goods. The manufacturer who is seeking new things in any field might well forget what has become general practice, and work things out in a common sense way.

Anti-Run Circular Hosiery

MANUFACTURERS BELIEVE IT CAN COME BACK


1- Even needles float
2- All needles knit
3- Even needles float
4- All needles knit
5- Odd needles float
6- All needles knit
7- Odd needles float
8- All needles knit

Courtesy of Scott & Williams, Inc.

Fig. 1. Action of needles in producing run-resist fabric of alternate tuck and float stitches on spiral machines. Plain lines represent 2-thd. yarn in No. 2 finger; shaded lines, 4-thd. in No. 6 finger.

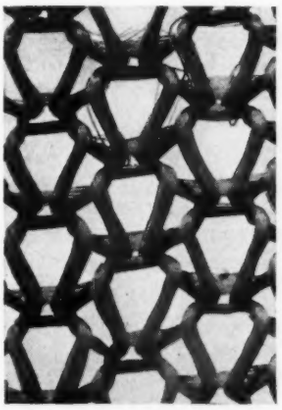
HOSIERY manufacturers are a little more emphatic than other men in their often-repeated declaration that women are not understandable. Notable among the bad guesses made by these gentlemen recently in an attempt to interpret the feminine mind was the idea that the lace vogue was here for a long stay. More recent than that was the belief that the anti-run stocking was destined to appeal to women's sense of economy, as well as to their esthetic emotion.

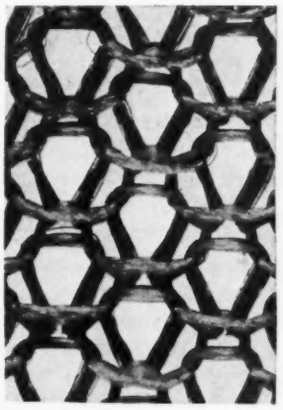
Poor merchandising in the full-fashioned trade can react unfavorably on the circular business, and in this case the circular men blame the full-fashioned group for most of their troubles. One instance of poor merchandising, they complain, was the advertising of the full-fashioned product before the mills were ready to supply the demand. Retailers who could not give their customers what they asked for did not speak with the required enthusiasm about the new stockings. The result was a dampener on the early interest of the consumer. Another difficulty lay in the high price established on the full-fashioned stocking. The circular manufacturers consider that this price was a merchandising error; but considerable justification for it lay in the excessively large number of seconds which at least the early machines produced. Whether an error or not, the high price was an unfortunate hurdle under the economic conditions of the times.

The next hurdle, which was definitely an error, and for which neither the full-fashioned nor the circular men (and particularly the latter) were entirely blameless, was the unjustified labeling of considerable run-resist hosiery as being "run-proof" or "non-run." Consumers once deceived by such labels were reluctant to bite again.

Although it is generally conceded that two types of full-fashioned stockings are run-proof, the statement is sometimes made that no circular hosiery thus far developed is more than run-resistant. The decision seems to rest on how we interpret the term "run-proof." While it appears that practically all circular hosiery can be made to run in an upward direction by at least prolonged teasing of the stitches between the fingers, it is evident that some of the stockings would be very unlikely to

(Continued on page 86)





Courtesy of Louis Hirsch Textile Machines, Inc.

Fig. 2. Face of fabric produced by Fig. 1, magnified 10 diameters.

Fig. 3. Back of fabric produced by Fig. 1, magnified 10 diameters

Fig. 4. Fabric produced by Fig. 1 as it appears to naked eye. Stockings of this character are produced by several mills, including Hanes Hosiery Mills Co., Winston-Salem, N. C., and Fisher Hosiery Co., Reading, Pa.

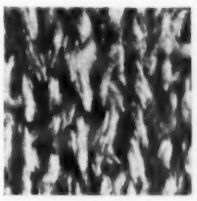


Fig.6. Fabric shown in Fig. 5 magnified 5 diameters.

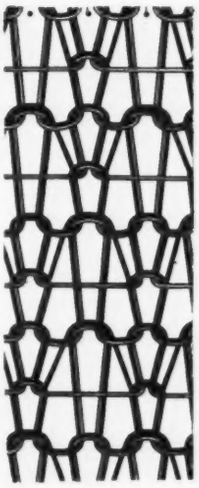


Fig. 8. Diagram of stitch formation in Fig. 7

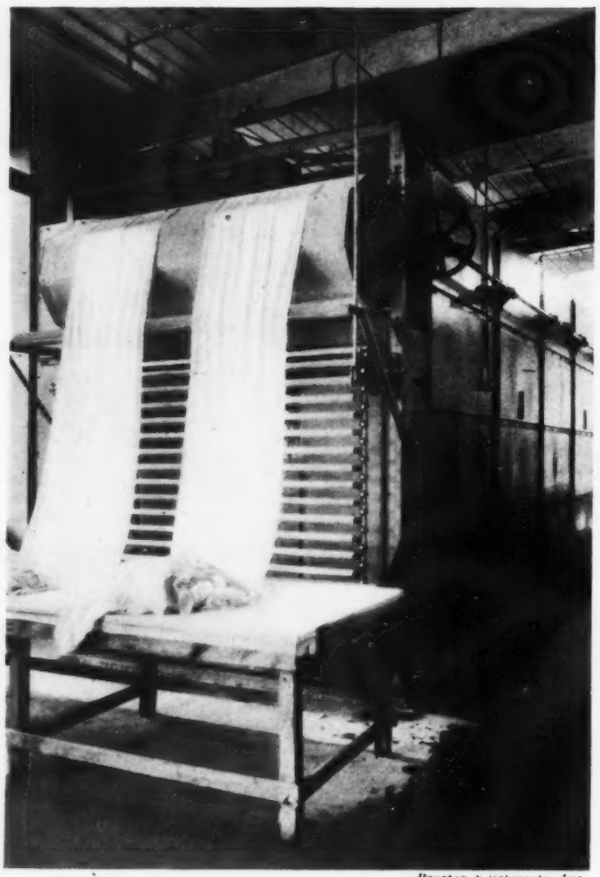
Fig. 5. Fabric in one of several anti-run stockings produced by H. R. H. Silk Hosiery Mills, Inc., Moberly, Mo.

Fig. 7. Anti-run-stocking fabric produced by Weinerth Knitting & Machine Co., Reading, Pa., recently merged with Laurel Hosiery Co., of same city

NEW PROBLEMS IN PROCESSING ACETATE FABRICS FACED BY

Knit Goods Dyer

By E. F. Cleveland



Proctor & Schwartz, Inc.

Modern loop dryer suitable for knitted fabrics

RECENT reductions in the price of dyestuffs for cellulose acetate have brought the cost of finishing acetate materials more in line with that for processing fabrics made from other synthetic yarns. This is one of the developments which makes it seem probable that more and more the knit-goods dyer will be called upon to handle acetate fabrics and that he will have to solve many new problems.

The reel-type machine used for rayon fabrics is also employed for knit goods containing acetate yarns, the capacity of the machines varying from 10 to 25 strings of fabric. It should be remembered, however, that the squeeze roller should not be used during any of the different processes, as it tends to form creases in the fabric. In the loading of the machine it is advisable first to fill the tub with soft, lukewarm water; next add the scouring chemicals; and last to run in the goods.

To obtain the best results the fabric should be scoured thoroughly. This may be accomplished, for example, by the use of 2 to 4 lb. of soap and ½ to 1 lb. of aqua ammonia to 100 gal. of water. A volume of 50 to 1 gives good results in the scouring operation, which is carried on for about ¾ hr. at a temperature of 145° F.

It may be necessary to bleach the fabric before dyeing some of the light shades, such as flesh, peach, nile, and sky blue. In that case, the addition of a small amount of sodium hypochlorite to the scouring bath will give a cleaner bottom for dyeing. Following the use of the hypochlorite, the goods should be treated for about 5 or 10 min. in a fresh bath containing a small quantity of sodium bisulphite, after which a test with starch-iodide solution should show that no chlorine is present. A good rinsing in soft water is necessary before the dyeing operation is started.

Use of a long bath in the dyeing of acetate knit goods is preferable, in that it will retard somewhat the exhaustion of the dye, which otherwise is rapid, and is especially noticeable in the light shades used for underwear. A bath having a ratio of about 75 to 1 is recommended. Usually about 4% of a good sulphonated oil on the weight of the material, along with a small amount of soda ash, is a sufficient dyebath assistant.

The dye should be dissolved and strained thoroughly before it is added to the bath. Dyeing may be started at about 100° F., and the temperature raised to 180° F. in not less than 25 min., although heavy shades may be brought up in less time. As a rule it will be found necessary to keep the temperature at 180° F. for 1½ to 2 hr., during which time additions of color may be made as necessary to obtain the proper shade. Full shades, such as scarlets, dark blues, and blacks, are sometimes started at 180° F. The dyer must keep it in mind constantly that a temperature of over 180° F., should be avoided in all wet-finishing operations; otherwise loss of luster may occur.

Addition of a softener, such as olive oil emulsion, sulphonated olive oil, glycerin, etc., to the last rinse bath is recommended in order to minimize friction during the sewing of the fabric.

Choice of the drying system for cellulose acetate knit goods rests, of course, with the finisher, and depends, too, upon equipment available and the form and weight of the fabric. There are several types of automatic loop dryers which are giving satisfaction in the quality and uniformity of results. Circular knit goods are also being dried by running the fabric over blown warm air at the entering end of a tube equipped with a drying spreader which helps in obtaining the desired width. Cellulose acetate holds little moisture, and on the blower-type system it will be found that air heated to about 175° F. will dry a piece which is approximately 100 yd. in length in about 25 min.

Few creases will be noticed if the hydro-extraction preparatory to drying is limited to not more than 5 min. at about 850 r.p.m. with a load of four or five pieces. Use of plenty of steam during the calendering is also beneficial.

Knitting Feeds

HOW THEY AFFECT CUT-PRESSER FIGURES

By J. Frederick Cahill
357 Fourth Ave., New York

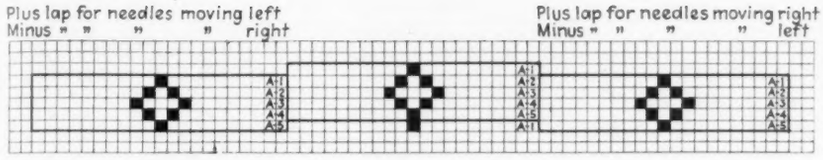


Fig. 2. Vertical and horizontal relation of figures

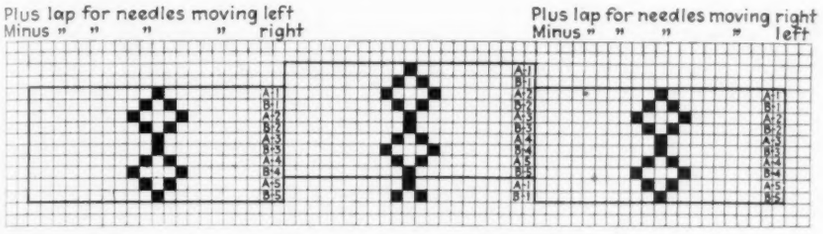


Fig. 3. Diamond design for two cut pressers

In our February issue Mr. Cahill set about to explain a logical procedure to be followed in designing cut-presser figures for spring-needle knitted fabric. Having at that time discussed the laying out of the figure, he now explains how the location of an individual figure in relation to that of others is governed by the number of feeds employed on the machine. Previous articles by Mr. Cahill on circular-knitting design appeared in the May 28 and July, 1932, issues. Others will follow.

THE effect of the number of feeds on the positions of figures in their relation to each other laterally in the fabric is shown in the diagrams. These also illustrate the possibility of vertical repeats in a straight line or column, and the impossibility of horizontal repeats in a straight line—and why.

Fig. 2 is a diagram of the simple diamond design on two feeds with one cut presser developed to two divisions for both plus and minus lap. Although a design for fabric usually or always is an illustration of the design as it will appear on the face of the fabric, in order to visualize it as it will appear from the outside on a loop-wheel, spring-needle knitting machine it is sometimes necessary to transpose or reverse it.

The middle column in Fig. 2 represents a design field of 21 needles or wales wide and five tuck courses high as it will be seen on the machine. The column to the right shows the effect of plus lap on a machine with needles moving to the right and of minus lap on a machine with needles moving toward the left; while the column to the left shows the reverse order, plus lap to left and minus to right.

Developed in this manner for five divisions each way (right or left), four on each side of the middle column, dropping down one course for each column, the fifth or bottom row would represent a complete presser diagram, for either plus or minus lap and for either right or left direction of needle travel.

This process would serve as well for any other design that might be set up in this branch of the knitting design field.

Fig. 3 is a diagram of the same design on four feeds with two cut pressers and developed to two divisions for both plus and minus lap and to two vertical repeats. As in Fig. 2, the middle column represents a design field 21 needles or wales wide; but, there being two cut pressers of five divisions each, the height of the field has been increased to ten tuck courses.

Due to the fact that two cut pressers instead of one are being used, a redistribution of the presser divisions, without altering them, is necessary. What in a single presser was division 1 has now become division 1 in presser *A*, designated as *A*-1. What was formerly division 2 is now division 1 in presser *B*, and may be called *B*-1, while the locations of the others are seen in the diagram.

The column to the right shows a drop of two tuck courses for each column, due to there being two cut pressers. This, being to the right, is the effect of plus or minus lap, according to the direction of needle travel. The column on the left corresponds to that one on the right; and if the development were continued to five columns, either way, including the middle column, each being two courses lower than the preceding one, the two lower lines would be complete diagrams of both pressers. The development to the right (each including the middle column) would represent diagrams for pressers with plus lap for needles moving to right and minus lap for needles moving to left, while that to the left would represent diagrams for pressers of a reverse order (plus lap for left movement of needles and minus for right movement).

In the case of a simple, symmetrical design, such as is being considered, if the deep cuts are placed in the presser or pressers in their proper sequence and the pressers—if more than two are used—are placed on the machine in their proper order, it does not matter whether the lap is plus or minus; or whether the needles move to the right or left. This might also be said to be true of any design figure that is contained wholly within the design field and has no connection or relation with its fellow figures to the right or left. Sometimes, however, the figures merely form units in a general design covering the entire fabric, in which case both the number of feeds and proper lap are utilized to bring about the desired effect.

General view in laboratory at Brooklyn, N. Y., plant of Julius Kayser & Co.

Average-Size Deviation

ITS INFLUENCE ON THE EVENNESS OF SILK

By Warren P. Seem
Julius Kayser & Co.

WE are tendered some lots of 13/15-denier silk as of 89/92% seriplane evenness which consist of five commercial sizes; namely, 10/12, 11/13, 12/14, 13/15, and 14/16 denier; we receive other lots which have but one commercial size. No one would knowingly purchase one or more bales of each of the five sizes named and mix them to make a 10-bale lot of 13/15 denier; yet we are receiving daily lots which are closely the equivalent.

This condition demonstrates the seriousness of measuring the evenness of raw silk on the seriplane and trading on that basis, and shows the necessity for a more accurate method of determining evenness.

It is a common occurrence to find sizes ranging from 11 to 17 denier in the regular 200 450-meter sizings. Does this range indicate a mixture of five commercial sizes given above? Yes, if there are a great number of each size. No, if there are only a few of the extremes present, as then they are considered as accidental sizings and do not affect the evenness of the product.

What number of 450-meter sizings are necessary to indicate one or more commercial sizes in a lot? The author has not been able to find any mathematical formula to compute that on 450-meters. The number of commercial sizes in a lot are found to be dependent on two factors: (1) the deviation from the average diameter; and (2) the shortest length which repeats itself as an index of long lengths of average size within a lot.

Length of Skein Required

To determine the proper length of skeins which should be taken for computing the deviation from average size, 4000 9-meter sizings were reeled from silk high and low in evenness. These sizings were divided into lots of 50, 100, 200, 300, and 400 skeins and weighed in deniers. The deviation from the average diameter in microns was computed in percentage.

The results on 80 lots of 50 9-meter sizings (each lot an aggregate length of 9x50, or 450 meters) showed deviations on 80 repeats varying from 4.5 to 23%, and averaging 7.7%. No two tests were alike. These results indicate that a sizing skein longer than 450 meters is required; and a length of 2250-meters was finally adopted, as it showed 50% of the repeats alike, with an average variation in deviation of less than 1%. This length has been given six years of practical application, and we find that it indicates the commercial sizes within a lot and is a reliable basis for computing the deviation from the average size.

There are two reasons why the computation on 450-meters does not give a correct evenness evaluation.

First, it does not show the range in size. The average length of very fine and very coarse threads is about 10 meters. If a 450-meter sizing, weighing 14 deniers, is cut up into 9-meter lengths these often show variations of from 6 to 25 deniers. Silk tendered as of 89/92% seriplane evenness built up from 9 meters into sizings of various lengths shows ranges in size as follows:

9 meters	10 to 20 denier
225 meters	10 to 17 denier
450 meters	11 to 16 denier
1125 meters	11 to 15 denier
2250 meters	12 to 15 denier

Second, the length is too short and does not repeat itself as an index of average size, as shown by tests on the 80 lots mentioned above.

Change Needed

As 450 meters has been used as the basis of length for average size for centuries, we shall discuss the problem

further to prove that a length of 450 meters does not meet the present requirement and should be changed. We receive raw silk in skeins about 40,500 meters long. In throwing a four-thread tram we wind a skein to a bobbin and double and twist the silk from four of these bobbins into one end of four-thread. If we cut the four single skeins into 9-meter lengths, we get (4x40,500)÷9=18,000 skeins.

If the 18,000 9-meter skeins are mixed thoroughly and doubled into four-thread 40,500 meters, the 9-meter lengths will pass each other 18,000 times and will produce, on a raw silk with a 9-meter evenness of 80%, a four-thread of 90% evenness, showing an evening-up factor of 10%. When, however, the silk is used as received, in skeins of 40,500 meters, the evening-up of the four-thread will be affected by another factor. This factor is the number of long lengths of average size, or so-called commercial sizes within the skeins. This is designated as the "deviation in average size," and is computed on the deviation from the average diameter in microns on sizings of 2250-meters and expressed in percentage.

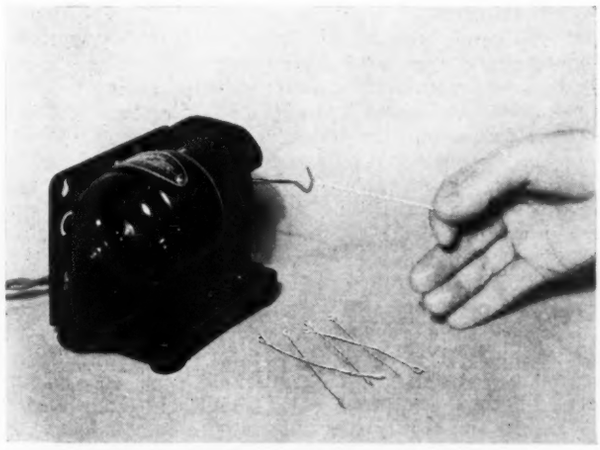
Table I shows the deviation in percentage and the approximate number of commercial sizes in a bale of that deviation.

The influence which various numbers of commercial sizes in a bale has on the evenness of a four-thread, using a 9-meter evenness of 80% as the raw silk basis, is shown in Table III.

Composite Evenness

The 9-meter sizings are reeled to get the maximum range in size to compute correctly the deviation from the average size; 2250-meter sizings are reeled to establish a base upon which to compute the deviation of long lengths from the average size of the lot. These two factors are brought together into a composite number by multiplying the 9-meter deviation percentage by the 2250-meter deviation percentage and calling the product composite evenness. When this is done, the evenness of the multiple threads can be found from the composite evenness by referring to Table II. Actual 9-meter sizings made on multiple threads agree very closely with the table and prove the correctness of the composite evenness measurement.

When the thread is used as reeled, the evenness is measured only by the 9-meter sizing; but when it is used in multiple threads, the composite evenness is required.



Electric motor equipped with twisting hook

TABLE I—

Deviation in average size and approximate number of commercial sizes in bale of that deviation.

Deviation in 2250 Meters	Number of Commercial Sizes
98/100%	1
96/ 98%	2 to 3
93/ 95%	3 to 4
90/ 92%	4 to 5
86/ 89%	5 to 6

TABLE II—

Evenness to be expected on multiple threads.

Raw Silk	Multiple Threads								
%	2	3	4	5	6	7	8	9	10
90	92.8	94.0	94.8	95.3	95.7	96.0	96.3	96.5	96.6
85	89.1	90.8	92.0	92.8	93.4	93.8	94.2	94.5	94.8
80	85.2	87.4	89.0	90.0	90.8	91.5	91.9	92.4	92.8
75	81.2	83.8	85.8	87.1	88.1	88.9	89.6	90.1	90.6
70	77.0	80.0	82.0	84.0	85.2	86.2	86.9	87.6	88.2
65	72.8	76.3	79.0	81.8	82.2	83.3	84.2	84.5	85.6
60	68.4	72.2	75.2	77.3	78.8	80.1	81.1	82.0	82.8
55	63.7	67.9	71.2	73.4	75.1	76.6	77.7	78.8	79.6
50	59.0	63.4	66.9	69.3	71.2	72.8	74.1	75.2	76.2

TABLE III—

Influence of various numbers of commercial sizes in a bale on evenness of a four-thread tram.

Deviation in 2250 Meters	Composite Evenness	Evening-up Factor on Four-Thread in Per Cent	Evenness Percentage on Four-Thread
99%	79.2	10.3%	89.5%
97%	77.6	10.9%	88.5%
94%	75.2	12.3%	87.5%
9 %	72.8	13.7%	86.5%
87%	69.6	15.4%	85.0%

The grading of evenness, however, is based on the composite evenness, as it is impossible to say in the primary market how the silk will be used.

An Illustration

To show clearly the effect which the commercial sizes within a lot have on the evenness, we offer a simple illustration; that is, we propose the building of a wall 56x56 in. and 100 ft. long, from six timbers 100 ft. long, each ranging **from 11 to 16 in. in thickness** and width, under the specification that the timbers cannot be cut in either thickness, width, or length. A wall built with such material, under the specifications named, would obviously be full of holes and very irregular in thickness and height. If, on the other hand, we cut the timbers into 1-in. blocks, we can build a perfect wall. This illustrates the influence which long lengths have on the uniformity of the wall. Likewise raw silk with long lengths of different sizes is somewhat similarly affected when using skeins of the regular length to produce multiple threads.

Because of the importance of this subject and the departure from the standard length of 450-meters for average size used for many years, the author submitted this finding to Prof. Thurman Andrew, and to Dr.

Warren E. Emley, of the U. S. Bureau of Standards, for their review from a mathematical viewpoint.

Comments by Professor Andrews

Professor Andrews' reply is as follows:

The composite method of computing evenness is undoubtedly correct. It requires no mathematical formula, other than that used by Mr. Seem, but rather a mathematical mode of reasoning. It is in a sense like the area of a rectangle that can vary both in length and width. To make it clear mathematically would require a discussion of the whole field of probabilities and least squares.

According to the test shown in the paper, silk varies in weight, not only over short lengths, but over long lengths as well. If all 2250-meter sizings weighed the same, the evenness found by using 9-meter sizings would be sufficient for all purposes. No correction for long sizing deviations would be necessary, because the evenness of long sizings would be 100%. By the rule adopted for composite evenness, the evenness found by the use of the 9-meter sizings would then be multiplied by 1, which would leave the evenness unchanged. Some silks show only 90% evenness on the 2250-meter sizings. The varying weight of long sizings is bound to affect unfavorably the quality of silk. To use a common phrase, the variation among long skeins discounts the evenness found by using short skeins.

Suppose a bale is divided into lots of 250 9-meter sizings at intervals of 100 meters, representing 100x250 or 25,000 meters, and the 9-meter test shows an evenness of 90%. Then suppose all of the skeins weighed in lengths of 25,000 meters showed an evenness of 90%. The true or composite evenness is then 90% of 90% or 81%. This is true because, while the variation of the 9-meter sizings within each 25,000-meter length may be the same, the variation of the 9-meter sizings is not the same for the whole lot. It could not be true for the whole lot because of the various average sizes of the 25,000 meters and the same amount of variations within each average size. In other words, no one of the 25,000-meter lengths contains all of the 9-meter sizes. This is a variation within a variation. The small sizings vary within the varying large sizings. This can be illustrated by considering a small cube of one kind of material within another cube of another material. Now suppose the inner cube shrinks 10% relative to the larger cube while the larger cube shrinks 10%. If the large cube shrinks 10% it will be 90% full size and so will the inner cube be 90% of its full size. If the small cube now shrinks 10% relative to the large cube it will shrink to 90% of 90% of its former size.

Concerning the proper length of sizings it is apparent that 450-meters is too long to catch the variations of short lengths. It is also apparent that if the 2250-meter sizings vary considerably in weight, the 450 meters are too short to show the proper variation in long sizings.

Since 2250-meters contain 250 9-meter sizings, it seems logical to use 2250-meter skeins to show the variations of long skeins. Suppose that the 12 inches within a foot vary but that the average inch is 1/12 of that foot, and that twelve so vary that the average foot is a true foot. Then suppose the smallest inch within each foot is 4/5 of the average inch in the foot and that the smallest foot in twelve is 9/10 of the average or true foot; then the smallest inch will be 4/5 x 9/10 of the true inch or 72% of a true inch. If the variation of inches in twelve were found and the variation of 1/2-ft. lengths were found, the simple product would not be correct. The same reasoning applies to the silk test except that it is bound up with probability and least squares.

Suppose that 250 9-meter sizings are chosen from a lot and found to vary in size from 10 to 19 deniers and to average 14 deniers. This shows ten sizes within 2250 meters of the silk. Now suppose that 250 2250-meter sizings are weighed and each is found to weigh exactly 14 deniers. If the 9-meter sizings typically represent the variation within each 2250-meter skein and the 2250-meter skeins do not vary among themselves, the results obtained by testing 250 9-meter sizings would be exactly the same as the results of testing the whole lot. In this case the unevenness would be affected only by the variations in short lengths. If we consider the other extreme, in which the 2250-meter sizings vary from 10 to 19 deniers and average 14 deniers, in the same way as the 9-meter sizings, we have a different story. This necessarily implies that the 250 9-meter sizings failed to give the true range of the whole lot, or that the variations of the 2250-meter sizings indicated a still greater variation among the 9-meter sizings than the 250 skeins show. (We are taking it for granted that the 250 9-meter sizings have the same average size as the whole lot.) This is not necessarily true, but the error in the average size is not so important as the range of the deviation.

Review by Dr. Emley

Dr. Emley's review of the article is as follows:

If a single silk filament has a diameter corresponding to 11 deniers, increases to 14 deniers for 9 meters, and then drops back to 11 deniers, this will produce a noticeable ring in a stocking. If a single silk filament has a uniform diameter corresponding to 11 deniers for a length of 2250 meters (approximately enough for a complete stocking) and then changes to 14 deniers, good stockings could be made, provided that the change from one stocking to the next occurred at the point where the diameter of the silk changed.

It is obvious that if 2250- (or 450-) meter lengths are used to measure denier, the variations within 9 meters will not be found. A sufficient number of 9-meter lengths could be measured so that, where combined in groups of 250 each, variations in the 2250-meter lengths can be found. But Mr. Seem's recommendation involves less work. That is, 250 9-meter samples are used to find the variation within short lengths, and 25 2250-meter samples are used to find the variation within long lengths.

Since both types of variation are of equal importance, Mr. Seem multiplies his results together to get a product called "composite evenness." This is the simplest procedure which can be used to arrive at a single number in which both components are given equal weight and in which the number can not be greater than either of its components (the value of each component being not greater than one).

This reasoning applies to a single filament. Mr. Seem points out that if several filaments are twisted together to form a thread, there will be an "evening-up effect," so that the composite evenness of the thread will be greater than that of its component filaments. It is also probable that if the change in diameter of the filament is gradual rather than abrupt, the effect on the appearance of the stocking would not be so noticeable.

Mr. Seem has frequently asked how many 9-meter, or 450-meter, or 2250-meter skeins, should be tested to arrive at a correct result. When dealing with a "uniform universe," where the law of probability can be rigidly applied, a statistician can predict how many samples are required to produce results of a given degree of accuracy. But in this case the universe is decidedly not uniform. The diameter of the silk varies within a single filament; the filaments vary within a single skein; the skeins vary within a single book; and the books vary within a single bale. Under these conditions, complete knowledge about the diameter of the silk can be obtained only by testing all of the silk. This is of course impractical—not only because of the amount of testing required (there are about 30,000,000 meters in a bale), but also because the testing method involves destruction of the samples.

The greater the number of samples tested, the more nearly will the test results represent the truth. It is thus seen that the number of samples to be tested depends on how closely it is desired to approach complete correctness. This latter question must be answered by a hosiery manufacturer, not by a mathematician. Mr. Seem's long experience has convinced him that the numbers of samples recommended will give results sufficiently near the truth to be satisfactory to a hosiery manufacturer. This decision can be questioned only by another hosiery manufacturer.

Labor Agreement

IN HOSIERY FIELD FACES TEST

OUTSTANDING among the problems now facing the unionized division of the full-fashioned hosiery industry is the difficult issue of labor relationship. This issue finds the two sides—the Full-Fashioned Hosiery Manufacturers of America, representing employers, and the American Federation of Full-Fashioned Hosiery Workers, representing workers—facing a possible deadlock, due to the divergent views of their respective memberships regarding wages. Numerous manufacturers seek a lower wage scale when the present agreement expires Aug. 31, which cut the workers oppose.

The problem facing the two organizations can be best understood when considered in the light of the purpose, scope and terms of the contractual relationship which the agreement represents. This relationship machinery established in 1929, provided for annual agreements.

The manufacturers were eager to reach a common understanding with the union, which would be binding and which would thus minimize the threat of costly interruptions to mill operation through strikes. Though representing only a minority of the industry, the manufacturers also hoped to set wage levels for the full-fashioned hosiery mills as a whole, which would help to eliminate labor costs as a competitive factor. The workers' representatives, on the other hand, wanted recognition of the union, a permanent basis of negotiations, and such betterment of working conditions as would help extend membership to non-union knitters.

These were the general aims behind the plan when it first was developed in 1929. Negotiations were led by S. E. Summerfield, president of Gotham Silk Hosiery Co., who represented manufacturers first as chairman of a manufacturers' committee and later as president of their organization, and Emil Reive, who represented the workers as president of the hosiery federation. The office of impartial chairman was created, the decisions of this arbitrator to be binding on both sides.

The actual operation of the agreement during the subsequent four years, however, was influenced by depression developments which materially altered some major aspects. In 1931, competition between union and non-union mills precipitated a virtual war, and it was charged that both parties to the union agreement used this pact as a weapon against the non-union mills. A wage cut of 30 to 45% was mutually agreed upon. The union voluntarily accepted the cut on the understanding that union manufacturers would cut prices in proportion.

The union's aim in the manoeuver was to force down non-union wages to a point where non-organized workers would join its ranks out of desperation.

The wage trend of the agreements since 1929 has been consistently downward; taking 1928 as base rate, the reductions to date total 60%. Annual digests follow:

1929 *Agreement*—This agreement went into effect in September, 1929. The union manufacturers were not yet organized, and the contract was signed by individual millowners with the union. This contract supplied the basic structure for the subsequent agreements. It created the post of impartial chairman, and Dr. Paul Abelson was named for that office. Except for certain moderate reductions in rates paid extras, there were no important variations of the wage agreement of March, 1928. The contract provided basis for carrying out a wage study.

1930 Agreement—Reflecting the downward trend in prices, this agreement authorized an average reduction of 18% in leggers' wages and also provided for two-job system by unionized help. New scale specified cuts of 15% in single jobs and 22% in double jobs. It was agreed manufacturers would go on two-shift basis of shorter hours to spread employment; also that manufacturers would set up unemployment fund for jobless knitters. Agreement effective Sept. 1, 1930.

1931 Agreement—This was by far the most significant agreement of the series. It authorized wage reductions of 45% for footers, 35% for leggers and 30% for toppers. The agreement also carried a clause providing that manufacturers' books be available to a committee headed by the impartial chairman. It was understood, first, that manufacturers would immediately reduce prices in proportion to the new low scale, and second, that the old rates would be reinstated at the end of the year, if improved business warranted. Dr. George W. Taylor succeeded Dr. Paul Abelson as impartial chairman during this period. Immediately after enactment of the accord, union mills reduced wages, as specified, and also cut hosiery prices about 20%. Agreement effective Sept. 1, 1931.

1932 Agreement—The 1931 agreement was renewed without important change. This was decided upon because an examination of manufacturers' books conducted previously by the impartial chairman and his committee indicated that profit status did not warrant resumption of the higher rate.

In surveying the history of the annual agreement certain points stand out. While various features of the agreement have fallen into disrepute by one side or the other, the office of impartial chairman has retained the confidence of both groups. Joint time study and unemployment insurance were tried and failed. No complete solution of the singling and doubling machine problem has yet been found. The agreement in its present state represents a high form of collective bargaining. A national labor union contracts with a national association of manufacturers.

Developments during the next few months will determine the fate both of the agreement itself and of the contractual relationship machinery. Measured in terms of mutual good-will, the impartial chairmanship would seem to be the chief gain of this four-year experiment.

Peroxide Bleach

ON COTTON AND COTTON-RAYON HOSIERY

By W. H. Hand

SATISFACTORY results in bleaching cotton and cotton-rayon hosiery with peroxide necessitate a thorough boiling out of the goods prior to bleaching and careful control of the bleaching operation itself. In the following paragraphs will be outlined briefly the methods employed by the writer in processing these two classes of hosiery in Monel metal machines of the paddle-wheel type.

The goods are first placed in bags, such as laundry nets. These bags should be full, but not overcrowded. About 8 or 9 doz. pairs of hose is a satisfactory amount. The scouring process is varied according to the type of hosiery, a somewhat milder treatment being employed for the cotton-rayon styles. In either case, however, about 75 to 80 doz. pairs of hose can be handled at one time in a machine which has a capacity of 325 gal.

Scouring Methods

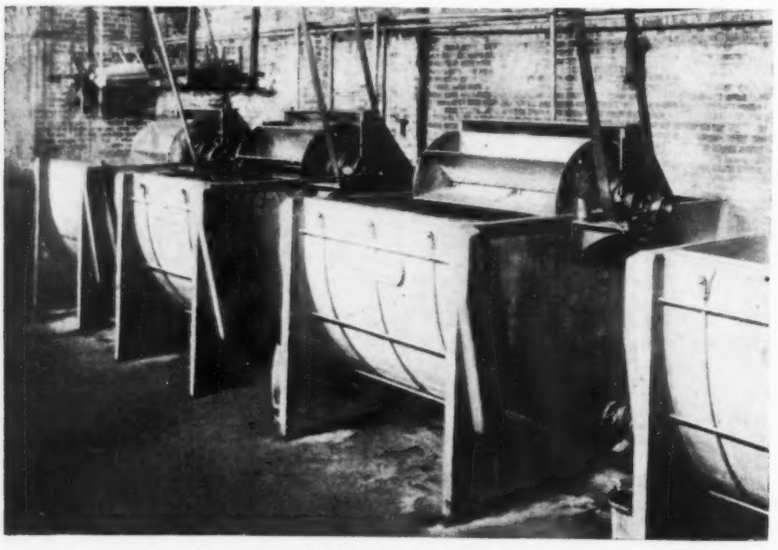
A typical procedure for all-cotton hosiery is as follows: Load the machine, bring water to a boil, add 3 to 4% of soda ash, boil for 1 hr.; run off the boil-out bath, give two rinses with water at a temperature of 140 deg. F. For scouring cotton-rayon hosiery, the following procedure is typical: load machine, bring water to boil; add 3½% of soap and 1% of soda ash, boil gently for 1 hr., run off scouring bath, and rinse twice with water at a temperature of 150 deg. F.; in place of soap and soda ash, a good pine-oil scouring agent and 1½% of trisodium phosphate may be employed.

Either hydrogen peroxide or sodium peroxide can be used for making up the bleaching bath. Although it is a little more trouble, the writer uses sodium peroxide. For bleaching 75 to 80 doz. pairs of all-cotton hose, the formula consists of 7½ lb. of 42° Bé., water-white sodium silicate; 8 lb. of 66° Bé., sulphuric acid; and 6¾lb. of sodium peroxide. For cotton-rayon hosiery, this is reduced to 6 lb. of sodium silicate, 7 lb. of sulphuric acid, and 5 lb. of sodium peroxide. Care must be taken to obtain sulphuric acid which is free from iron.

The bleaching bath for the cotton-rayon hosiery, for example, is prepared as follows: Water is run into the machine until it barely touches the paddle, and 2 lb. of a good penetrating oil and 5½ lb. of sodium silicate previously diluted with warm water to a volume of 4 gal. are added.

In a separate mixing tank, such as a wooden barrel, 8 lb. of sulphuric acid is stirred into 25 gal. of cold water; the sodium peroxide is sprinkled slowly into the bath, the solution being agitated constantly during this addition. Next we add ½ lb. of sodium silicate and test with red and blue litmus paper. If the red litmus paper turns blue, we add a small amount of sulphuric acid to correct the alkalinity of the solution; if the blue litmus paper turns red, we add a small amount of sodium peroxide to overcome the acidity. When the solution is neutral to both red and blue, it is transferred to the paddle machine containing the water, bleaching oil, and sodium silicate. The bath is brought to 180° F., and bleaching is carried out at that temperature. As a rule, a satisfactory bleach is obtained in 1 hr. In some instances bleaching takes place in a shorter time; in others, a somewhat longer time.

During the addition of the sodium peroxide to the acid solution, it occasionally happens that the bath assumes a brownish cast. In this event, discontinue addition of the peroxide, stir the bath well, and add sulphuric acid quickly and in small amounts until the bath is clear. Then add ½ lb. of sodium silicate and test for and correct any acidity or alkalinity as directed.



Battery of bleach tubs for hosiery

Testing the Bath

In order to determine the exact strength of solution required for bleaching a certain class of goods, tests of the bath are made with potassium permanganate solution (9.72 g. KMnO4 per liter). The test procedure is as follows: Place about 20 c.c. of a 20% solution of sulphuric acid (4 oz. of commercial sulphuric acid to 1 pt. of water) in a wide-mouth bottle; and add 10 c.c. of the bleach bath. While shaking the bottle, run in the permanganate drop

by drop from a burette until a faint permanent pink appears throughout. The number of cubic centimeters of the permanganate used gives the number of pounds of sodium peroxide contained in 100 gal. of the bath. For example, if 80 c.c. of permanganate were used, each 100 gal. of the bath contains 8 lb. of sodium peroxide.

By testing the bleach bath with permanganate, one can estimate the amount of peroxide which is not used up in bleaching the goods. If there is an excess of sodium peroxide in the bath after bleaching is completed, the quantities in the formulas given above can be reduced to the point where nearly all of the peroxide will be consumed during bleaching.

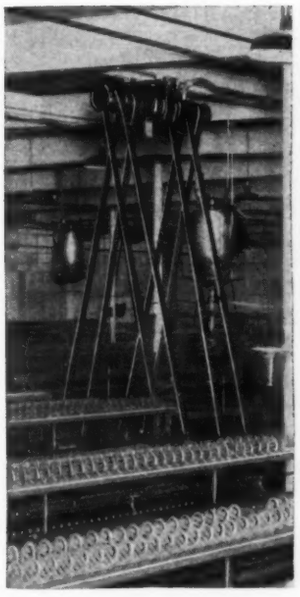
If it is necessary to increase or decrease the amount of sodium peroxide, the amount of sulphuric acid must also be increased or decreased, as the case may be, in proportion to the peroxide. About 1.4 lb. of sulphuric acid is required to 1 lb. of sodium peroxide. The amount of sodium silicate should always be the same.

When bleaching is completed, the goods should be thoroughly rinsed. It is advisable to take the chill off the rinse water. Next the hosiery is soaped at 130° F., and again rinsed with warm water. During this last rinse, a small amount of bluing is added; and finally, after the goods are blued, 2% of a good softening oil. The hosiery is run for 10 min. after addition of the softener, removed from the machine, extracted, and boarded.

PROPER RECONDITIONING PREVENTS RUIN OF

Leather Belts

By J. N. Smith
E. F. Houghton & Co., Philadelphia



MANY plants undoubtedly have dozens of belts which have stood idle for some time. Before this belting is put back into service it should be carefully inspected and reconditioned if necessary. Belting often deteriorates more rapidly when idle than when in regular use. In addition, many things can happen to an idle belt, and invariably it will need some attention to place it in first-class condition.

Here are a few conditions which should be checked: Is the belt saturated with oil or covered with dirt? Are there any open laps? Is the length correct? Are the fasteners worn or broken? Is alignment of pulleys correct?

If belts have become soaked with mineral oil, degrease them by soaking in gasoline or carbon tetrachloride for 24 hr., or longer if necessary. In doing this it must be remembered that the degreasing not only removes all mineral oil, but also the natural oil which is essential to lubricate the fibers of the leather. Therefore, after the belt has been thoroughly degreased, dress it with a good belt lubricant to lubricate and preserve the fibers of the leather.

Do not use a sticky belt dressing, as it will not lubricate the leather. Never permit foreign matter, such as lumps of belt dressing, dirt, wood chips, or adhesive material of any kind, to gather on the belting or pulley faces. Clean the belt by scraping with a dull-edged scraper with rounded corners. Do not use a sharp scraper, as the fibers of a belt must not be injured.

Check all the laps and see that they have not started to separate, especially the tip of the lap. If it is found necessary to re-cement a lap, be sure to scrape off all of the old cement. Before the cement is applied, the laps should then be thoroughly roughened with coarse emery cloth, a rasp, or a wire brush.

A belt which has been left on an idle drive under tension has no doubt become permanently stretched. Therefore it is wise to remove the belt from the drive and shorten it to the proper length to give the desired tension on the drive. If the drive is to be idle for some time, do not install the belt so that it will be tight. In fact, it is better not to install the belt at all until it is needed.

Fasteners of all types should be gone over carefully. If any of them are either worn or broken, they should be replaced immediately. A worn fastener is liable to let go at any time. A broken fastener will not only cause the belt to run crooked, but will also damage wood or composition pulleys.

Pulley Alignment Should be Checked

Pulley alignment is very important from the standpoint of belt life and transmission efficiency, as well as the operator's safety. It should be carefully checked during your belting inspection.

The application, maintenance, and repair of belting should be in the hands of a competent man trained in this service. Many good belts have been ruined by incompetent repairs. If your plant does not have the facilities for properly reconditioning your belting, any reliable belt manufacturer can do this work for you.

PACIFIC AND SAYLES NOW PRODUCING

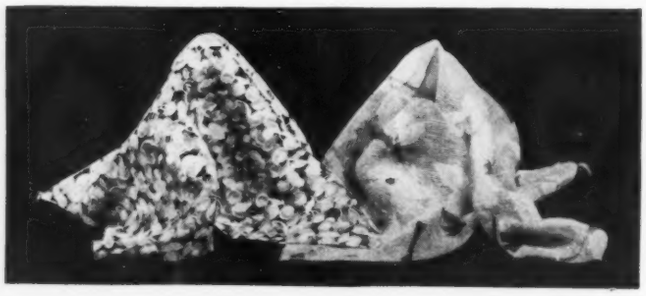
Anti-Crease Fabrics

COMMERCIAL production by Pacific Mills and Sayles Finishing Plants, Inc., of anti-crease cotton and rayon fabrics is doubly significant. It gives promise that cottons and rayons will find increased use in dress goods, suitings, and other apparel; and it affords definite proof of the value—both to the manufacturer and consumer—of applied textile research.

The anti-crease process employed by Pacific and Sayles was developed after fourteen years of research by Tootal, Broadhurst & Lee, of England, and was described in the September, 1932, issue of TEXTILE WORLD. Briefly, it consists of treating the fabric in such a way as to form a synthetic resin within the fibers. Being resilient, this resinous compound gives a springiness to the fibers. As a result, it is stated, the fabric resists creasing; crushed in the hand, then released, it springs back smooth and uncrumpled. Wrinkles in garments which have become mussed through ordinary wear, or through pressing in a traveling bag, "hang out" in a short time, and the garment becomes wearable.

In the accompanying illustrations are shown two of the anti-crease fabrics now being produced in this country—one a printed cotton chiffon developed by Pacific Mills; and the other a rayon flat crepe finished by Sayles for Galey & Lord. There is on the market also a line of printed 70s cotton voiles which is finished by Sayles for W. E. McKay & Co. Additional styles and constructions are to be made available as fast as production facilities permit.

So new is the anti-crease process, that at present a complete and unbiased appraisement of its full value is impossible. It is certain, however, that it has a real, though yet undefined place, in the finishing industry. In reviewing the claims cited for the new process it should be emphasized first that no assertion has been made that the fabrics are "creaseless," and in fact, a completely creaseless material would not possess the properties requisite in most textiles. Rather, the property imparted is a combination of resistance to and recovery from creasing. In its present stage of development, the process is applicable chiefly to materials composed of cotton and/or synthetic yarns of the regenerated-cellulose type.



(At right) Pamilla anti-crease chiffon produced by Pacific Mills, (at left) Anti-crease rayon flat crepe finished by Sayles Finishing Plants, Inc., for Galey & Lord.

TABLE I.—Resiliency of fabrics before and after anti-creasing treatment

Fabric	Untreated Warp	Untreated Filling	Treated Warp	Treated Filling
Cotton warp, viscose filling	1.7	2.2	3.3	3.3
Cotton warp, viscose filling	1.5	1.9	2.8	3.7
Cotton warp, viscose filling	1.7	1.3	2.9	3.8
All spun-viscose material	2.4	2.6	3.3	3.1
Viscose and cotton mixture	1.2	1.2	3.3	3.1
All-viscose crepe georgette	1.1	2.0	2.8	3.0

TABLE II.—Effect of anti-crease treatment on breaking strength (in lb.) of rayon

Fabric	Dry Warp	Dry Filling	Wet Warp	Wet Filling
All spun viscose				
Untreated	49	59	19	28
Treated	66	97	37	57
Viscose voile				
Untreated	24.6	21.5	*	*
Treated	33.0	23.8	22	16.8

*Less than 5 lb.

In the case of rayon, the anti-crease process has the further advantage that it reduces the extensibility of the yarn and increases the breaking strength, particularly when wet. Also, the treatment reduces the tendency towards slippage of warp and filling threads exhibited by many rayon fabrics. Again, it lessens the amount of shrinkage which ordinarily occurs during laundering.

Although the weight of the textile is increased about 15% by the anti-crease process, since the synthetic resin is deposited within the fibers only, and not on the surface of the yarns or fabric, the appearance of crease-resistant materials and those finished by usual methods is the same. It is stated that the anti-crease feature is not substantially destroyed by washing.

Resiliency of fabrics can be tested by folding in half a swatch measuring 4x1 cm., allowing it to remain under a definite weight for a specific period of time, placing it by means of a forcep either on a wire or on mercury, allowing it to remain for a short definite period of time to "recover," and measuring the distance between the extremities. In Table I are shown the results of tests on treated and untreated fabrics of the same construction as reported by Tootal, Broadhurst & Lee. In Table II are given results of tests made by the same company of the breaking strength of treated and untreated rayon fabrics.

Although no information has been made generally available as to the possibility of dyeing or printing fabrics which have been subjected to the anti-creasing treatment, it is assumed that this is not feasible, and that the process is purely a finishing operation. Nevertheless, with the large range of fast colors now available, there should, apparently, be little difficulty in producing shades uninjured by the chemicals employed for imparting the crease-resistant finish. If the anti-crease treatment lives up to expectations, it is not at all improbable that the process will become a standard finishing procedure for certain types and styles of apparel fabrics; and that the crease-resistant feature will aid materially in increasing the sales of cottons and rayons.

Lacquer Finish ON RAYON FABRICS

DEMANDS EXPERT HANDLING

By Raymond W. Merrall

TO THE finisher who is familiar with the production of glazed effects, the "lacquer" finish, now the vogue on a wide variety of rayon fabrics, seems at first thought to be achieved simply. As a matter of fact, the desired appearance and handle are produced by finishing methods which at present are not commonly employed in many of the plants which may be called upon to process rayons on which this lacquered effect is wanted. While there is no great mystery to the lacquer finish, and no "secret formulas" are involved, satisfactory results can be obtained only through the skillful use of suitable equipment and finishing materials.

From the viewpoint of the technician, the term "lacquer finish" is a misnomer, since the finishing materials ordinarily employed are soluble in water and are not true lacquers. It is a good descriptive term, however, as the appearance of the fabrics is such as might be obtained if a light coating of a transparent, high-luster lacquer were applied to the face of the material.

Chiffons are typical of the synthetic-yarn fabrics on which the lacquer finish is popular; and the procedure employed for finishing this class of goods is applicable, with certain modifications, to many other types of material. The inclination of many cotton finishers is to use cotton-finishing methods and equipment for rayon; but in order to obtain best results on chiffons and similar fragile constructions, it is necessary that silk-finishing practices be followed.

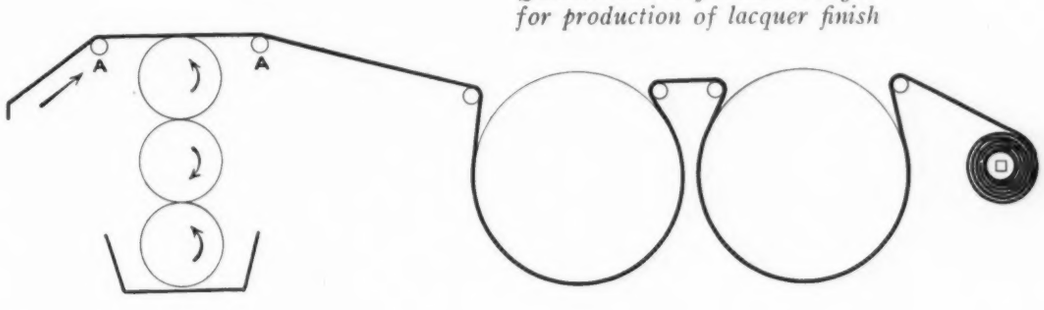
The exact formula for making up the finishing bath is determined by the type and quality of the fabric and the particular handle and appearance required. Essentially, the bath consists of a stiffening agent and a softener. One recipe calls for 3 lb. of gum arabic to 100 gal. of water, to which is added a small amount of sulphonated oil. On some types of fabrics, which have been dyed or printed with fast colors, sodium silicate can be used as the stiffening agent. The formula which will give the best results on any specific material can be determined by means of a few trial runs.

The method of sizing is important; and the size should be applied on a smooth-running quetsch. The accompanying sketch illustrates the method of threading the goods and also indicates the direction of the rollers and the fabric. The support *A*, which may be a brass bar, is attached to the framework, and is so adjusted that the cloth just barely skims the surface of the top roll, which is wet lightly with the size solution. This arrangement gives a surface application of the size to the face of the goods, with practically no soaking through to the back.

It should be particularly noted that the fabric is run directly onto dry cans, so that the back is in contact with the cylinders. In this way the sizing remains on the face of the cloth. The goods should not be batched after quetsching; otherwise permeation of the size throughout the goods is inevitable. After drying, the fabric is framed with a very little steam, and is batched for calendering.

Calendering is carried out on the conventional silk calender equipped with wool-felt top and bottom rolls, and a steam- or gas-heated, steel middle roll. In lacquer-finished fabrics it is desirable to have as much contrast as possible between the face and the back of the goods. This maximum contrast can be obtained in several ways. Perhaps the simplest method is to lap the top bowl of the calender with a woven wool-felt blanket, taking care to comb out or unravel the ends of the lapping to avoid mark-offs. The steel bowl is heated to a surface-pyrometer reading of 330° F., and the goods are run through the calender with the face to the heated cylinder.

Quetsch and dry cans arranged for production of lacquer finish



Weaving Performance...

HOW IT WAS ANALYZED IN A SILK AND RAYON MILL

By Otto Bitzenhofer

SUFFICIENT recognition is not given by silk and rayon mills to the advantages of developing statistical data on weaving performance, with respect to both quality and production. This type of work is too often looked upon as adding unnecessary costs to the business of manufacturing. I agree that there is little purpose in merely developing such data—it must be put to use.

We expect from our mill a good and steady production and likewise a satisfactory relation between quality, cost, and production. In every business, however, there are factors which tend to militate against our attaining this result. In the silk and rayon mill we have the variable human factor to contend with in the weave room, the variability in age and condition of looms, and the wide variations in the yarns submitted to and employed by the weave room. Such items as the quality of the raw stock, differences in temperature and humidity, and seasonal changes in the amount of light reaching various working places must also be considered.

Weaving-performance information can be of value to the buyers of raw material, as it provides a means for determining readily how various qualities of material affect the performance of the mill's operations. These buyers may find more economy, for example, in the purchase of higher-quality and more-expensive raw material.

The charts shown as Figs. 1 and 2 represent weaving performances over an entire year in a progressive German mill. In Fig. 1 the upper group of lines represents rayon and the lower group represents silk. In Fig. 2 the upper group represents looms operating with one shuttle; and the lower group, those working with several shuttles.

In each case the upper broken line indicates the average favorable performance expected based on a year's operation, and the lower broken line represents the lowest permissible performance. Those weavers whose percentage of performance runs below the lower line must receive more careful instruction, or the defects in the equipment they operate or in the material they receive or in the conditions under which they work must be investigated and eliminated. The degrees of efficiency are set up for the entire mill or for single departments working the same material, such as silk, rayon, cotton, etc. In arranging comparisons there must also be considered the number of looms assigned to one weaver. The latter consideration makes possible determining the most economical number of looms which one weaver can handle on each kind of material.

The vertical lines in the chart divide the year's operation into weeks; and it will be noted that on a number of occasions the efficiency remained below the lower broken line for several weeks at a time, indicating that during such periods performance was decreased and cost increased. The letters on the charts below the various curves represent the factors affecting them. A key to the meaning of these symbols accompanies the charts.

Let us take several places on these charts for consideration in detail. These places are indicated by vertical broken lines and by the expressions "Case A," "Case B," etc.

On the rayon curve in Fig. 1, at "Case A," it will be noted that the average loom efficiency is 79%. Table I, which analyzes "Case A" in detail, shows that 70% of the total looms involved operated at an efficiency of 78%, 79%, or 80%. It may also be seen that 13% of the looms operated above 80%, while 17% of the looms ran below 78%. The last two groups of looms are therefore analyzed in order that the reasons for performance both above and below the average may be determined. The results of this analysis are shown in the three right-hand columns of Table I. Although it will be noted from the rayon curve in Fig. 1 that the lowest permissible percentage of efficiency is 76, it is always well to study all looms which fall below the general average.

Following "Case A" down through the silk curve of Fig. 1, we find the average efficiency of the looms to have been 82%, while the lowest permissible efficiency was 79%. The single-shuttle curve in Fig. 2 shows at "Case A" an average efficiency of 84% with a permissible efficiency of 81%. The multiple-shuttle curve is unsatisfactory at this point because it shows an average efficiency of 73%, while the lowest permissible efficiency was 75%. However, the multiple-shuttle curve is rising at this point and reaches 75% at the end of the 45th week, finally attaining 83% at the end of the 48th week. The mill, of course, has a record of the reasons for the decline and subsequent rise in a table similar to Table I.

Now let us refer again to the rayon curve at the place designated as "Case B." The factors affecting the looms above and below were of course analyzed and recorded in a table similar to Table I. It is interesting to note that the performance efficiency increased during the sixth week of February from 78% to 85%. At the end of the seventh week the efficiency had fallen to 82%.

It is helpful to determine the number of picks per day attained by the entire department under the degree of efficiency at which it operates. This figure provides a basis for establishing piece rates. The following formula serves to provide this performance figure in picks per period of time:

$$\frac{\text{Picks per minute} \times \text{Working time} \times \text{Efficiency percentage}}{100} = \text{Performance in picks}$$

Applying this formula to "Case A" on the basis of 79% efficiency, 8 working hours per day, and 142 picks

Table I

Case A—Performance of Individual Looms (79%, av.) and the Reasons

Loom No.	Favorable Percentage	More	Less	Influences Responsible: Weaver	Loom	Material
1	79					
2	79					
3	78					
4	79					
5		82		Good	Lrep	Mq II
6	79					
7	80					
8	79					
9	79					
10		86		Very good	Lrep	Mq I
11		84		Very good		
12	79					
13	80					
14	79					
15	79					
16			72	Skill slight	Lnr	Mq II Mfp
17	79					
18		84		Good	Lrep	Mq I
19	79					
20	79					
21	80					
22	79					
23	79					
24			76	Good	Lnr	Mq II
25			78	Good	WF.	Mq II
26	79					
27	78					
28	79					
29			72	A	Lrep	Mq II
30	79					
31	79					
32		87		Good	Lrep	MqI
33	79					
34	78					
35	79					
36	79					
37	79					
38	79					
39			70	Skil slight	Lnr	Mq II Mfp
40	78					
41	80					
42	79					
43	79					
44		91		Good	Lrep	Mq II
45			72	Skill slight	Lnr	Mq II Mfp
46	79					
47	79					
48	80					
49	79					
50	78					
51	79					
52		81		Good	Good	Mq II
53	79					
54			74	Skill slight	Lnr	Mq I
55	79					
56			69	Skill slight	Lnr	Mq II Mfp
57	78					
58	79					
59	78					
60	79					
61	78					
62		89		Very good	Lrep	Mq I
63		91		Very good	Lrep	Mq I
64	79					
65	79					
66	80					
67	79					
68		85		Good	Lrep	Mq I
69	79					
70	78					
71			73	Skill slight	Lrep	Mq II Mfp
72	79					
73			73	Good	Lnr	Mq II Mfp
74	80					
75	80					
76	79					
77	79					
78			71	Bad sight	Lrep	Mq II
79	80					
80			76	Good	Lnr	Mq I
81	79					
82			68	A	Lnr	Mq II
83	79					
84	79					
85			70	Good	Good	Mq II Mfp
86		82		Good	Lrep	Mq II Mfp
87		89		Good	Good	Mq II Mfp
88	79					
89			74	Skill slight	Bad light	Mq II
90	78					
91	80					
92	79					
93			73	Skill slight	Lrep	Mq II
94			77	Skill slight	Lnr	Mq II
95	78					
96		87		Good	Lrep	Mq II
97	79					
98	80					
99	79					
100	79					

KEY TO SYMBOLS—Mq I, II, III, material quality (I, II, III used). T, temperature, moisture. Lr, loom repaired. Lnr, loom needs repair. Mfp, material faultily prepared. Wne, weaver not experienced. Ln, loom new. Lrep, loom lately repaired. A, apprentice. LB, light-brightness. Se, season. V, vacation. H, holidays. Pwf, preceding work faulty. WF, warp faulty.

Table II

Weaving Analysis at 79% Efficiency

Item	Percentage of Total Work Time	Minutes per Time required for 1000 Picks	Number of Stoppages per 1000 Picks	Minutes per Stoppage
1. Pure running time of machine	79	7.04		
2. Exchange of quill	3.0	0.26	1.4	0.19
3. Thread breaks behind harnesses	2.2	0.20	0.3	0.97
4. Removing thread breaks in front of harnesses	2.1	0.18	0.3	0.67
5. Filling breaks	1.7	0.15	0.13	1.15
6. Quills run out and not noticed in time	1.4	0.13	0.22	0.60
7. Clearing the shuttle race plate	0.3	0.03	0.2	0.14
8. Looms stop without reason	1.2	0.10		
9. Small repairs	1.0	0.09		
10. Personal matters	1.8	0.16		
11. Loomstops caused by second loom served by one weaver	1.3	0.12		
12. Disposing of woven goods	5.0	0.45		
Total	100	8.91		

per minute, the following is obtained:

$8 \times 60 = 480$ minutes per day

$$\frac{142 \times 480 \times 79}{100} = 53{,}800 \text{ picks per day.}$$

In "Case B," with 85% efficiency and the same number of picks per minute and hours per day, we have:

$$\frac{142 \times 480 \times 85}{100} = 58{,}000 \text{ picks per day.}$$

In "Case C," with 72% efficiency, we have:

$$\frac{142 \times 480 \times 72}{100} = 49{,}000 \text{ picks per day.}$$

The difference between the highest and lowest percentages of performance amounts to 9,000 picks, or 18.4%.

Thus far we have analyzed only those looms which are above or below the average; but, having determined what is a satisfactory production, it is desirable to analyze the performance of looms operating at that production, as has been done in Table II on the basis of 79% efficiency. At first thought the reader may feel that the time required to overcome each defect as shown in the extreme right-hand column should equal the total time lost per 1,000 picks divided by the number of times the same defect occurred in 1,000 picks. This is not necessarily the case because the time lost per 1,000 picks is calculated from the total, and in the case of the time lost on individual occasions the extremes are eliminated and an average is set.

In other words, in developing figures for satisfactory performance all time lost which is exceptionally high or exceptionally low is of no interest to us. These extremes do of course require to be given further special study.

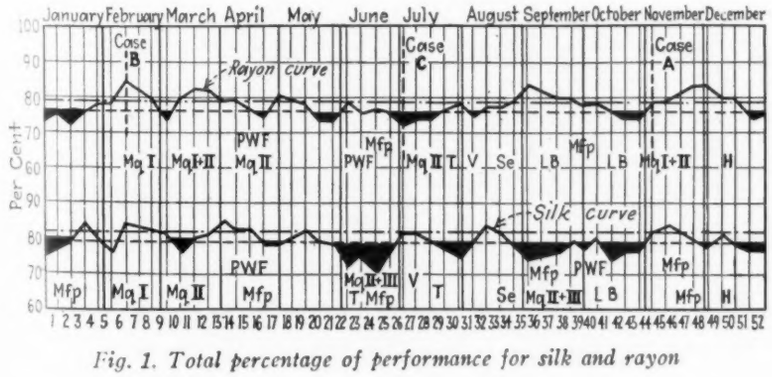


Fig. 1. Total percentage of performance for silk and rayon

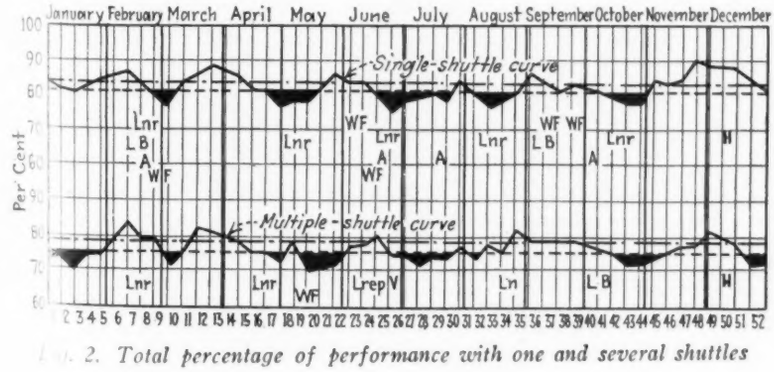


Fig. 2. Total percentage of performance with one and several shuttles

A SIMPLE METHOD FOR

By Milton Duxbury

Weaving Leno with Beads

WITHIN the last few years the three-thread leno has attained a popular position as curtain material, due to the fact that an unlimited field for fancy patterns is opened. This class of goods is usually made with the aid of the super doup; but, barring the fact that a double thread must be used for the cross or douping thread, they can also be made with the aid of beads. The method of douping or crossing with beads is somewhat similar to the way the crossing is accomplished in a Russian cord, except that the two crossing threads are drawn under, instead of over, the standard ends. Details on procedure follow:

Fig. 1 shows a draw and the weave for a fabric which is leno throughout. Fig. 2 shows a draw and weave like Fig. 1, except that the crossing threads are kept on the same side of the standard ends for five picks, this giving three picks of leno and five picks of plain weave. The sequence can be varied to give a plain figure on the leno ground, when the warp is drawn with a series of other independently controlled crossing threads and a suitable pegging plan is used.

From the harness draft in Fig. 1, it will be noted that four harnesses control in effect three threads, as the two threads drawn in the bead must operate as one. It will also be noted that one crossing thread is drawn on each side of the two standard ends, then under the standard ends, and finally through the bead. Now looking at the pegging plan in Fig. 1, we find that on the first pick No. 1 harness is down, No. 2 is up, No. 3 is down, and No. 4 is up. The No. 4 harness is the most important harness on this pick, as the thread on this harness controls the bead on this particular pick. We find both threads up on the left-hand side of the standard ends. While No. 3 harness is down, No. 3 end is being eased by the easer bar, causing it to become slack. It therefore offers no resistance to the bead, which is being pulled up to the top shed line by the No. 4 harness. The easing operation also takes some of the wear off the yarn, as the No. 3 end, which is being held down by the No. 3 harness, must also pass under both standard threads, one of which is down at every pick. This necessitates extra length of yarn, which is supplied by the operation of the easer bar. This extra length is necessary because of the fact that No. 3 end is down and up at the same time; that is, down by No. 3 harness and up with the bead. Pick No. 2 operates in exactly the same way as No. 1, except that all the harnesses change position. This brings the bead up on the right-hand side of the standard ends, and on this pick No. 4 end is eased.

Coming to Fig. 2, we find the weave like that of Fig. 1, except where it begins weaving plain. To weave plain, it is necessary to discontinue the operation of one of the crossing harnesses completely. The pegging plan reveals that No. 4 s not operating during this time. Pick 4 shows No. 3 end up and No. 4 end eased. This brings our crossing threads up on the right-hand side of the standards. Pick No. 5 shows Nos. 3 and 4 down. This keeps both threads below the shuttle line and prevents interlacing with the filling.

Fig. 3 shows a combination of groups of three operated in such a manner as to form a simple figure. One of the restrictions is that three harnesses, two standard and one figuring, must operate as plain weave throughout. A glance at Fig. 3 shows harness No. 3 in every group of three working in this manner. Consequently the No. 3 thread of all groups of three can be drawn on the same harness. The No. 4 thread and all figuring threads are placed on separate harnesses, as will be noted in the drawing-in draft. The extent of the pattern is limited only by the number of spare harness levers on the dobby; i.e., a twenty-harness dobby will give seventeen spare levers for figuring, it being absolutely necessary to use two levers for standard and one for the No. 3 thread.

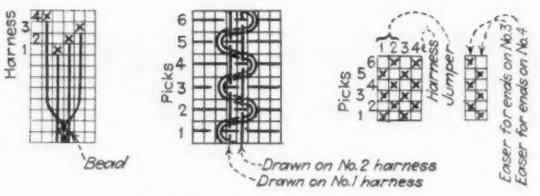


Fig. 1. Leno throughout

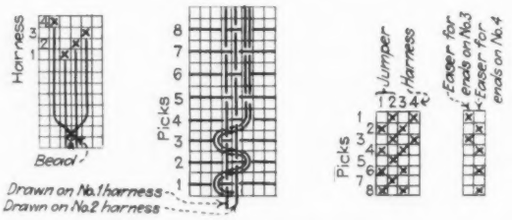


Fig. 2. Leno and plain weave

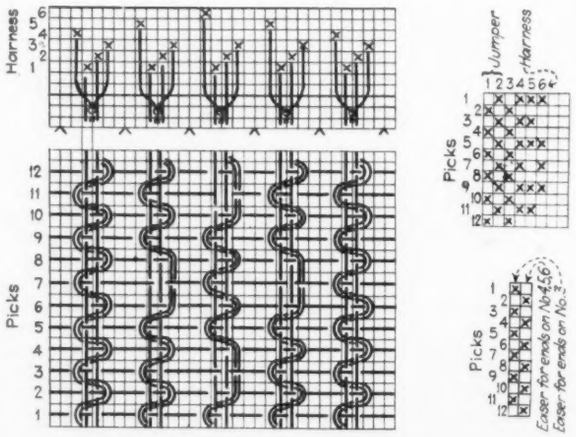


Fig. 3. Formation of simple figure

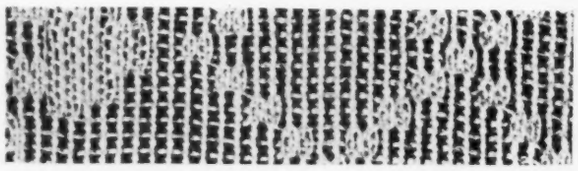


Fig. 4. One of many patterns

The question might properly be asked, why not work the beads over instead of under the standard ends. I believe that working the beads over is the proper method, if plain leno throughout is required. However, the reason for working the beads under the standard ends is that ends Nos. 4, 5, and 6 are placed over the same easer bar and that all No. 3 ends are placed over a separate easer bar, the latter being eased at every other pick. All No. 3 ends do not actually require the easer at every other pick, as in cases where No. 3 and the figuring harnesses are down at the same time; consequently some of the ends are bound to be-

come slack. Working the beads under the standard ends enables the slack ends to drop out of the shed and rest on the race plate, out of the way of the shuttle. It would be impractical to put seventeen easer bars on the loom; hence the job is made workable by putting all threads, other than standards and No. 3 ends, over the same easer bar.

It will be noted that a jumper motion is used on the No. 1 and No. 2 harnesses. Theoretically, a jumper is not required here, but the writer has found that jumping these two harnesses facilitates the movement of the bead. A long-slotted saddle should be used on No. 1 and No. 2 harnesses. This will allow sufficient freedom for the harness lever.

Several variations or modifications can be made, such as doubling up all the threads to balance the double thread through the bead; running all threads from the same beam; running the crossing threads from a separate beam, which can be put under less tension than the standard beam, thereby giving a waved effect; putting two or more picks per shed; and reeding the warp to get striped effects, etc. The beads should be light and smooth. Try to balance the pattern with an equal (or as nearly equal as possible) amount of plain weave in each group throughout the pattern.

Women's Cotton Suitings

By T. R. Hart
North Carolina State College

DURING recent weeks approximately 100 samples of cotton or rayon and cotton fabrics, ranging from light-weight materials to heavy cotton suitings, have been submitted to the home-economics classes of eight North Carolina colleges so that each young lady could choose a fabric from which to make a garment. The homes of these students range from New York to Alabama, and it seems that the fabrics which appealed to them is a good index of what would appeal to young women in general. As a large percentage selected heavy cotton suitings from which they will make coats and sports costumes, three of the more popular patterns in this class will be described here. All of these patterns were designed and woven in the Textile School of North Carolina State College by students. Drafts and small swatches are illustrated. Details follow:

Fig. 1 is a color effect made by reversing the plain weave at desired intervals. This fabric is made from 20/2 yarn and contains approximately 44 ends and picks per inch. The design is shown at Fig. 2. It should be warped and picked one white, one color. When the white filling floats over a white end, it forms a hairline stripe which runs lengthwise of the fabric. Raising or lowering an end for two picks causes the white filling to float over the green ends, thus forming hairline stripes which run across the cloth. Thus by reversing the plain weave at various intervals the designer has produced an attractive pattern which is effective when woven with green and white, black and white, or any other two strongly contrasting colors.

Entwining twills are constructed from regular twills by running twill lines to the right and left so that they meet at right angles. Fig. 3 is a fancy entwining twill made by omitting some twill lines from each section of the regular entwining twill and continuing the remaining twill lines in each section until they meet those of the other section. This forms two blank spaces in the weave which can be filled in with small fancy effects. This fabric contains approximately 44 ends and picks of 20/2 yarn per inch. By using a white warp and contrasting colors of filling, an attractive line of fancy entwining twills can be woven from design at Fig. 4.

Fig. 5 is an attractive suiting fabric woven with blue warp and filling. It was warped six ends of 20/2 blue, two ends of 20/3 blue, thus forming a neat corded effect lengthwise of the cloth. It contains about 40 ends per inch and approximately 44 picks. The design is shown at Fig. 6.

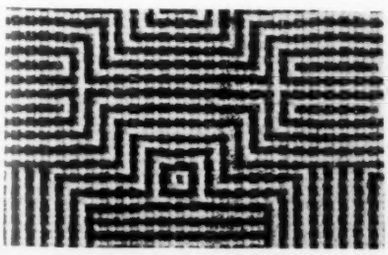


Fig. 1. Plain weave; frequent reversals.

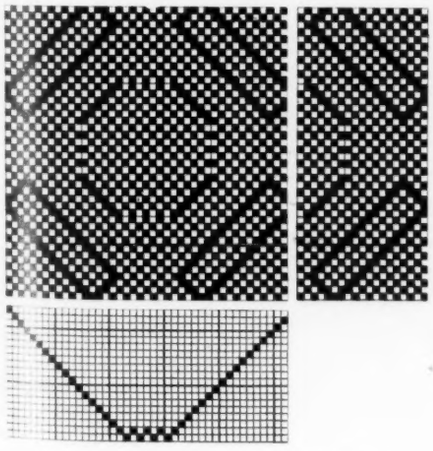


Fig. 2. Design and drafts for Fig. 1.

Fig. 3. Fancy entwining twill.

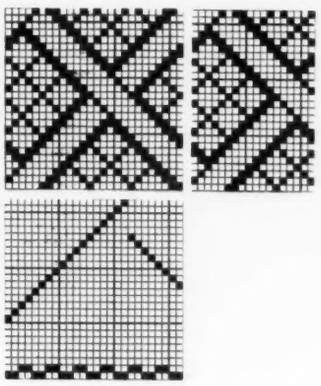


Fig. 4. (above) Design and drafts for Fig. 3.

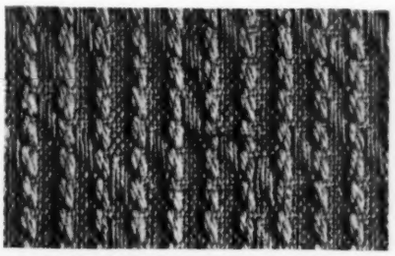


Fig. 5. Suiting with corded effect.

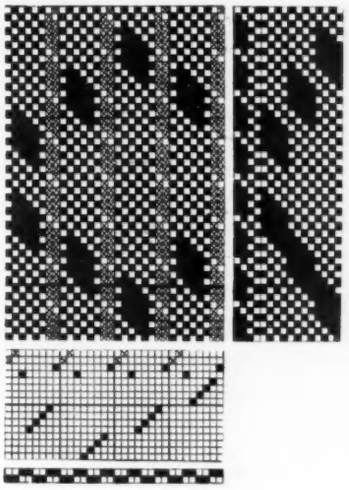


Fig. 6 (at right) Design and drafts for Fig. 5.

Variable-Speed Spinning

AMONG NUMEROUS TOPICS DISCUSSED BY GEORGIA EXECUTIVES

◆ *Practical yarn-manufacturing subjects touched upon by the Textile Operating Executives of Georgia at the recent Atlanta meeting included raw-stock oiling, one-process picking, continuous card stripping, straight-wire and metallic clothing, drawing-roller bearings and settings, fiber roving bobbins, cork rolls, variable-speed spinning, wick roll oilers, and bunchless automatic cleaners.*

RECENT developments in carding and spinning were discussed at the spring meeting of the Textile Operating Executives of Georgia, held at the Georgia School of Technology, Atlanta, March 17. George S. Elliott, superintendent of Pacolet Mfg. Co., Mill No. 4, New Holland, Ga., acted as general chairman of the meeting. The morning session was devoted to a consideration of card-room problems, the discussion being led by A. E. Massey, superintendent of Exposition Cotton Mills, of Atlanta.

Oiling Raw Stock

The application of oil to raw stock in colored-goods mills, and particularly on stock-dyed cotton, was said to have several advantages. Not only is there less fly in the mill, which greatly improves working conditions for the operatives, but also the amount of dust is reduced in the preparatory processes. Some trouble had been experienced as the result of travelers loading up, but this has been overcome by reducing the amount of oil applied. From ¼ of 1% to ½ of 1% is about the amount of oil generally applied.

Where the opener room is located some distance from the picker room, it was said to be better to blow rather than to suck the cotton from the opener room. The fire hazard was said to be greater in the case of blowing the cotton. It was pointed out that, where the distance is very great, a booster pump could be installed in the conveyor line.

Several members reported considerable reduction in the percentage of rejected picker laps as a result of changing from two- or three-process to one-process picking. In one mill, making a 50-lb. lap with tolerance of ½ lb. on either side of standard weight, 3,000 laps were run through with only 90 being rejected. The usual number of rejections with the one-process equipment in this mill is 3 to 4%, whereas before the change-over rejections averaged about 8 to 9%. Other members reported from 1 to 3.6% rejections with the converted type of one-process picking. In one mill equipped with an original model of single-process picking, with tolerance of ½ lb., rejections were said to average only 1%, which was accounted for almost entirely by the effect of changing from one kind of cotton to another. The modern type of positive knock-off motion, with hunting-tooth gear, for pickers was said by several members to give excellent results.

Continuous card strippers should be moved away from the cylinder when grinding, according to H. H. Purvis, superintendent of Chicopee Mfg. Co., Gainesville, Ga., who stated that $\frac{1}{16}$ in. is the setting recommended for continuous strippers. His experience was with twenty cards equipped with this type of stripper, carding 10 lb. per hour. Another member stated that two years is about the life of needles in the continuous strippers.

Card Clothing

Several members reported experience with metallic- and straight-wire card clothing. In one mill which has 23 cards equipped with metallic clothing, some of which have been running for three years, with the same settings as those used for regular knee-wire clothing, it is necessary to strip about once a week. There was found to be a reduction in waste with metallic clothing, as compared with regular clothing, while greater production was obtained due to the elimination of grinding.

Straight-wire clothing has not been found to be favorable in every case, it was reported. One member stated that straight-wire clothing cannot be set quite so close as the conventional knee-wire clothing and that the cleaning is not quite so good. The straight-wire clothing was said to require longer stripping periods, and savings from this type of clothing were reported to diminish until, after a time, the knee-wire clothing has the advantage. Cylinders equipped with straight-wire clothing were said to load very rapidly during the first 24 hours after stripping, after which the flats start loading.

Several members were of the opinion that re-collared drawing rolls are just as satisfactory as new ones, if the work is properly done and good material used. The cost was said to be about $6 to $8 per delivery. It was felt that ball or roller bearings, if applied to the journals of drawing-frame top rolls, would give better tension and probably justify the additional cost. One member had experimented with impregnated wood bearings on one drawing frame and found them to be quite satisfactory.

The settings for drawing-frame rolls were considered. From one mill came the following report:

"We set our drawing-frame rolls as follows, front to second, 1 7/16 in.; second to third, 1 8/16 in.; third to back, 1 10/16 in. We run two lengths of staple, $\frac{7}{8}$ in. and $\frac{15}{16}$ in.; and on account of the possibility of having to run either staple on any frame, we have them all set wide enough to take care of the longer cotton. Diameter of roll, $1\frac{3}{8}$ in.; card sliver, 55 grains; first drawing sliver, 62 grains, with draft of 5.32; second drawing sliver, 62 grains, with draft of 6.00. This is a total

draft of 31.88. The breaker and finishing drawing are set the same. We have not changed settings lately."

Fiber bobbins for roving frames had been tried in three or four mills and were considered very satisfactory. They were said to have several advantages, including the following points: fiber bobbins do not split, dirty waste does not cling to them, moisture does not damage them, and oil from spindles or bobbin gears does not affect them.

Cork rolls were generally recommended for the card-room processes. The cork rolls on fly frames in one mill have been rebuffed only once in three years. In another plant which had its card room completely equipped with cork rolls 18 month ago, the rolls on speeders were said to look just as good as they did a year ago, and have given no trouble. Harry J. Horn, superintendent, Walton Cotton Mills Co., Monroe, Ga., favored more frequent rebuffing of cork rolls with lighter rebuffing required each time. This was said to keep the surface of the roll in better condition for efficient drafting.

Spinning-Room Problems

The afternoon session, which was in charge of J. C. Edwards, superintendent, Martha Mills, Thomaston, Ga., was featured by reports on recent experience with variable-speed drives for spinning frames. One member reported an increase of 16% in production, as compared with constant-speed drives on the same type of frames with the same number of yarn. No difference was noted in the amount of end breakage or in the breaking strength of the yarn. This report covered the latest-type variable-speed mechanical-drive units, applied to a modern long-draft spinning frame of 304 spindles, powered with 7½-hp. motor, spinning 25s filling yarn. On this type of drive, it was pointed out, it is not necessary to reset the variable-speed control after each doff. The starting speed of front rolls is 132 r.p.m., while the maximum speed of 166 r.p.m. is reached in 44 min., and the frame runs for three hours on each doff. The constant-speed frames with which the above comparison was made are operated in this mill at a front-roll speed of 136 r.p.m.

The consensus of opinion was that wick oilers for front-roll stands on spinning frames do not offer any material advantage in coarse-goods mills. Slight increase in breaking strength was noted in one mill after the wick oilers were installed. In another plant a test made on one spinning frame showed power consumption saving of 9c. per week, but this was offset by an increase of about 100% in the amount of oil consumed, as compared with the old method of oiling.

Several members found that spinning rooms require somewhat less recorded humidity after the installation of bunchless automatic cleaners. E. H. Rogers, agent, Fulton Bag and Cotton Mills, of Atlanta, stated that in one spinning room of 25,000 spindles, after the installation of a complete system of bunchless automatic cleaning, it was possible to operate with 5 to 10% less humidity. Long-draft spinning was installed at the same time, however, so he was not in position to say that the cleaning system was responsible for the reduction in humidity required. Another member reported substantially the same experience, saying that the overhead cleaners blow the humidity down into the yarn, and that there is much better distribution of humidity in the spinning room.

Still another member reported a reduction in the recorded humidity after the installation of the automatic bunchless cleaning system. He declared that the new system is especially advantageous for long draft and that his mill has estimated that the equipment would pay for itself in 18 months as the result of the savings it effects. The cleaners complete their circuit every six minutes in this spinning room, which is turning out 23s, 17s, and 15s yarn. Chairman Edwards stated that the baffles should be set to direct the air current about midway of the creels.

Roll Coverings

Cork rolls were found to be satisfactory in spinning coarse numbers up to 20s on long-draft frames, but were not generally recommended for fine counts, although it was mentioned that some combed-yarn mills are known to be using cork rolls on yarn numbers as high as 80s. In one mill the spinning room was completely equipped with cork rolls about eighteen months ago. The rolls are rebuffed every six months, and after two rebuffings they were said to give some trouble in starting up after the week-end. The superintendent of this mill believes that costs have been reduced about 45%, day and night operation, by the adoption of the cork-covered rolls. Chairman Edwards reported an experiment on rebuffing calfskin-covered rolls, similar to the rebuffing of cork rolls, but could give no definite results at this time.

Several miscellaneous ideas were advanced for trial in the spinning room. One member pointed out that no provision had been made in clearer boards for the ends of the top rolls, and stated that he had been experimenting in an effort to find something satisfactory to put under the ends of the top rolls to take care of the condition. Another member suggested putting upholstery tacks in the bottom ends of roving skewers after they had worn and would not revolve freely.

V. J. Thompson, superintendent, Manchester (Ga.) plant of Callaway Mills, Inc., was elected to the executive committee of the association, succeeding A. E. Massey, superintendent of Exposition Cotton Mills, Atlanta, Ga., whose term had expired.

Trouble at the Mule

SOME CAUSES OF WOOLEN-YARN DEFECTS

By T. Lawson

◆ *Following is an abstract of an interesting survey of causes and remedies of defects in woolen yarns published recently in "The Textile Manufacturer" of England.*

THERE are cases where slight variations may occur at the mule. If it happens that the rollers are not giving an exactly equal length of slubbing with each draw, then obviously something is slipping in connection with the length gear. It may be that through constant wear on one section of the index gear the teeth have become worn and fail to mesh properly, therefore allowing occasional slipping or jumping. In this event it will be advisable to remove the fixed peg on the wheel to another point, and therefore bring into use a different section, where the teeth are in better condition. It may be that a degree of hesitancy occurs in knocking-off. In this case the counterbalance or the spring is not effective enough to keep the train of gears in mesh. A slight addition to the weight, or a stronger spring, as the case may be, will remedy this.

Another fault, more difficult to locate or even to detect, may be due to a slight hesitancy on the part of the cam to change on the outward traverse, with the result that the carriage may occasionally over-run its ordinary traverse and consequently give an increased draft, producing a smaller thread. This condition may be due to the cam friction leather having become greasy and failing to grip. A good wiping with dry cotton waste, and the application of a small dusting of powdered chalk, will effect a cure. Or it may be the friction leather has become so far worn that the bell does not properly grip. If it be possible to release this a little, so that it fits further into the bell, and thus insure a better grip, that will effect a cure. If, however, this be not practicable, it will be necessary to fit a new leather; this, after being fixed, should be soaked with a thick castor oil to render it pliable and assist its grip. In cases where the cam is operated by a spaced gear the leading tooth often becomes ineffective and needs to be replaced. This is accomplished by dovetailing in another tooth. Another possible source of variation is the jacking-up motion. If this be not giving a definite amount of relief with each draw, the "length" will vary proportionately, although the difference in size of yarn from this cause is scarcely noticeable.

To insure evenness of twist it is imperative that the thread be kept perfectly taut during twisting, and such jacking-up as is allowed must be very gradual, and not commence until the yarn is at its highest point of tension. If the thread be allowed to sag, the twist will approximate towards each end of the draw—at the spindle-tip and at the nip of the rollers,—leaving the larger, middle portion of the draw proportionately softer, varying in strength and also in diameter; and in this connection it may be remarked that mules of exceptionally long draw are not the best adapted for spinning yarns requiring uniform size, strength, and density. A draw of 78 in. is long enough for any heavy yarn, and a draw of 72 in. is long enough for any heavy yarn requiring much twist. Mules of 84-in. draw are not successful with thick heavy yarns.

The twist-regulating mechanism on the mule is designed to give a fixed amount of twist or number of turns with each draw; but if from some cause the strap be slipping and fails to impart the full normal speed to the rimshaft, an amount of momentum is lost, and consequently the full number of turns is not imparted. The strap must be kept in such condition that it is always master of its work, wide enough to cover the whole pulley surface, strong enough to carry its load, and pliable to grip the pulley surface effectively.

The rim-band may be slipping, causing loss of speed between the rimshaft and the spindle. This may be caused by the cylinder line being untrue and driving heavily, or by the rim-band becoming too small.

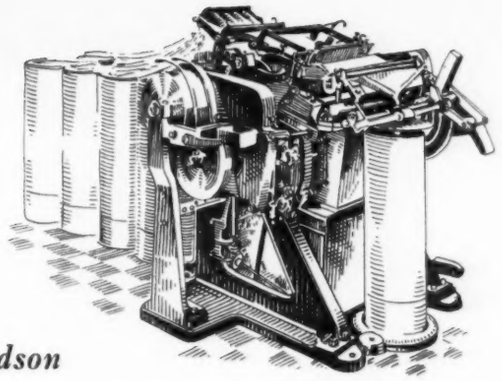
The kind of spindle band most generally favored is a $\frac{1}{16}$-in. three-ply, but a disadvantage of this is that when one strand is broken the spindle is carried for a considerable time by the remaining two strands at a reduced speed, and a quantity of soft yarn is made. If a band of two-ply at the same thickness be used, this disadvantage disappears; for if one strand breaks, the remaining strand will not carry the spindle, and a new band is substituted before harm is done.

Snarls are most frequently the result of broken ends being allowed to run down and neglect to lift up the cop or bobbin to the level of the remainder on the set. Other causes are more difficult to locate; one is found in irregular or too-easy backing-off; sometimes the rotation of the spindle in backing-off is in excess of the faller changing, and snarls are formed before the counterfaller picks up the threads. To remedy this, the snail-chain must be tightened up so as to draw the backing-off chain on to the larger circumference of the click-scroll, which will impart a quicker motion to the fallers in changing. Another cause may be slack winding at the building of the cop foundation, in which case the snarl is formed during unlocking at the close of the inward traverse. If the quadrant be set more forward, the speed of the spindles at the point just before the close of the inward traverse will be increased, thus taking up more of the yarn and leaving less available for snarl formation. The counterfaller should pick up the ends promptly at backing-off, and retain control until unlocking at the return, finishing at the level of the spindle-top.

Tying knots at the mule should be avoided, except in the case of very strongly twisted or keenly drawn yarns of small size, and then the knots must be made as smooth and neat as possible.

French Comb

DELIVERY ADJUSTMENTS FOR VARIOUS WOOLS



By Frederick B. Hudson

THE skillful use of leverage is responsible for the novel method of adjusting the delivery rollers of the French comb. The motion is self-contained and the use of change gears is eliminated. The application of these principles to other textile machines would dispense with the limitations of change gears and would enable alterations to be made without having about 60 spare gears for every machine.

The scope of this comb extends from the shortest merino wools, which cannot be combed with satisfaction on any other type of comb, to the long luster wools. The adjustments necessary in changing from a long to a short wool are made by altering the position of the levers concerned.

There are two levers needed in actuating the drawing-off mechanism, the first controlling the drawing-off rollers and the second controlling the calender rollers. A quadrant rack of 68 teeth is placed at a tangent to the end of the drawing-off lever and is fulcrumed at the pivotal stud. When the force is applied to the short arm by the crank, the rack is moved according to its distance from the fulcrum.

The application of the force is varied along the short lever according to the type of wool being combed. A short wool is given a leverage of 9½ in., which moves the quadrant rack 30 teeth. When a long wool is combed, a much greater amount of drawing-off is necessary. This is obtained by applying the force at 5½ in. from the fulcrum and moving the quadrant rack 54 teeth.

For guidance in setting, the short-lever slot is marked in four equal places, which are numbered 1 to 5. These distances are given in column three of Table I. The corresponding number of rack teeth are shown in column four; and the distances moved, in column five. The drawing-off roller of this comb has a diameter of ⅘ in. and is covered with leather 1/10 in. thick. The circumference is 3.14 in. The gear driven by the rack has 17 teeth, so that the length of a draw with the lever in the first position is $(54 \div 17) \times 3.14 = 10.1$ in.

The sliver is formed after combing by overlapping the fringes from each succeeding draw. The amount of overlap varies with every type of wool. Slight adjustments are necessary for lots of similar qualities, because the amount of drawing-off is dependent on the length of the fibers and their position on the drawing-off leather. When fibers lie in ridges or bars across the leather, a larger overlap is needed. Suggested amounts of overlap for various types of wools are given in Table II.

The tufting of the fibers into a sliver is done by reversing the drawing-off rollers for a given distance at the end of each draw. This distance is controlled by a small rack of 29 teeth, which can be set to give any effect desired. Details of the setting will be found in column three of Table II.

In changing from a short wool to a long one, the drawing-off rollers tend to jerk, instead of having an even motion. This is due to the thrust of the crank arm against the short lever, and the defect can be remedied by placing the crank arm at the top center and bringing the drawing-off rollers into their middle position. The setting slot should then be brought into line with the center of the crankshaft. This adjustment gives an even distribution of the forces acting upon the carriage.

Calender-roller speeds are governed by the amount of the tuft piecing. When the fibers are overlapped for half their length, the speed of the calender rollers is half the speed of the drawing-off rollers. Variations made by the adjustment of overlap must be compensated at the calender rollers. This is indicated by the tension placed on the sliver, as it passes down the brass funnel, by the drag of the calender rollers.

The compensating motion for the calender rollers is a short rack which can be altered to place from 5 to 25 teeth in action. The pinion on the calender-roller shaft has 13 teeth, and the rollers have a diameter of 2⅛ in. A movement of 13 rack teeth gives a sliver delivery of 6.68 in. When 20 teeth are moved, as shown in column five of Table II, the sliver delivered is $(20 \div 13) \times 2\frac{1}{8} \times \pi$, or 10.3 in.

TABLE I—Drawing-Off Particulars

Type of Wool	Fiber Length in Inches	Setting Number	Inches from Fulcrum	Rack Teeth Employed	Length of Draw in Inches
Luster wool.	10	1	5½	54	9.9
Medium cross bred.	9	2	6	48	8.9
Fine cross bred.	8	3	7	42	7.75
Merino.....	6	4	8	32	6.1
Short merino	4½	5	9½	30	5.5

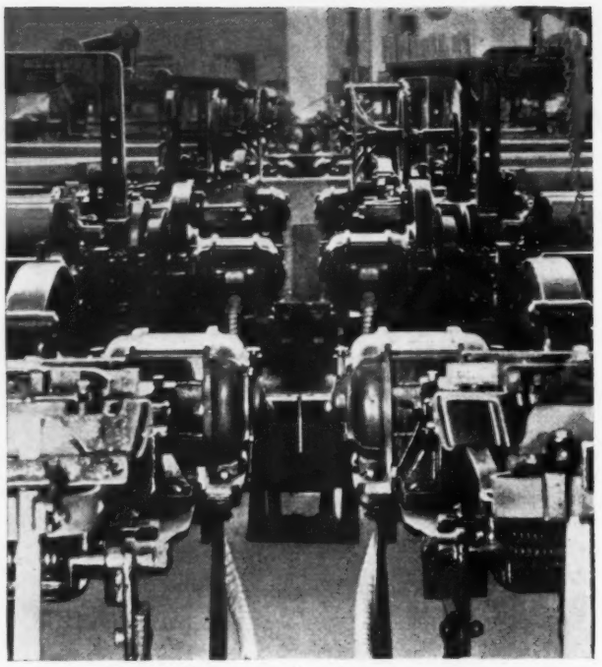
TABLE II—Details of Tuft Piecing

Quadrant Setting Number	Amount of Overlap	Inches of Overlap	Small Rack Teeth	Teeth of Calender Rack	Inches of Calender Rollers
1	½	5	27	20	10.3
2	⅓	4⅓	24	15	7.8
3	7/12	3¼	24	12	6.25
4	⅔	2	22	10	5.2
5	⅔	1.9	20	7	3.6

WASTE ELIMINATION IS IMPORTANT FACTOR IN LOWERING

Power Costs

By Roy Reddie
Consulting Engineer, Knoxville, Tenn.



SOME companies have found relief from high power costs by the installation of their own electric generating plants. Many concerns, however, are not in a financial condition which warrants a heavy capital expenditure for new power-plant equipment at this time, and must rely on the public utility companies for energy. But these mills can make substantial savings by plugging the various power leaks which are readily observable in practically all manufacturing establishments.

Power leaks are of two kinds—electrical and mechanical. They may be grouped as follows: overloaded transmission lines and grounds, overloaded or underloaded motors, excessive peak loads, miscellaneous electric losses, prime-mover inefficiency (or sub-station and secondary-mover losses), mechanical power losses in the line between the motors and the machines, and power losses in the machines.

Heavy overloads on the transmission and feeder lines are indicated by line-heating and a drop in voltage. Rigid inspection, by a trained mechanic, of all conductors, connections, joints, and bonds will, in general, reveal unsuspected power losses, and will well repay the cost of inspection. All conductors and connections must be of ample cross-sectional area to insure against heating. Low voltage at the motors imposes high amperage demand at a given power output, resulting in heat losses in motors and conductors. It often is wise to replace some lines with heavier copper, and thus assure ample size to carry loads efficiently.

Insulators should be clean. There may be a loss of current at the insulators, varying from a milli-ampere to several amperes. Certain forms of mineral dust may collect on the insulators, and then, if there be moisture present, the leakage of current may amount to half an ampere per insulator. It is conceivable that a loss of $\frac{1}{5}$ ampere at each of 200 insulators can leak away $25 per month on peak, and $8 to $10 on energy rates.

When motors are underloaded and their speed decreased, their efficiency is impaired. At rated speed and full load they are approximately 90% efficient. A reduction of 25% in the load lowers their efficiency about 2%, and there is a 5% drop in efficiency at half-load. This indicates that use of larger motors than are necessary may prove very costly.

The peak demand should be closely watched. Flattening the peak of demand not alone reduces the demand charge, but it increases the load factor. Trimming down the peak of demand by 1 hp. will pay a worth-while dividend. How much attention is given in the average industrial plant to the matter of lights when the plant is starting up? Yet the power consumed by each 100-watt lamp may cost 25c. if it is left on during the five minutes of maximum demand. Untimely operation of machines is a great source of waste; this is especially true of machine shop tools, air compressors, pumps, etc. Every non-essential user of energy should be shut down at known times of peak demand.

Millions of dollars worth of energy are lost to industry annually because of the careless neglect of shafting, bearings, pulleys, and belting. Inspection and maintenance of alignment of shafting and pulleys may safely be entrusted to the care of a reasonably careful and observant mechanic. Care and servicing of bearings and belting, however, demands the unremitting care and attention of an experienced millwright, supplemented by the advice of the engineering department.

There is loss of power from friction at every bearing. This loss is continuous while the mechanism operates. Anything that will reduce it will save money to the plant, unless the cost of making the saving is greater than the cost of the power lost. Ball and roller bearings—although comparatively high in first cost and likely to require frequent replacement if improperly designed, installed, and serviced—prove beneficial in saving energy and reducing power costs when properly applied in places where they are suitable. There are obtainable, too, alloys specially formulated to meet onerous bearing conditions, and the difference in cost over older types of alloys is negligible.

When belting is improperly serviced it causes tremendous losses in wasted power. If tightened to excess by hit-or-miss methods, power is wasted at the overloaded bearings; the life of the bearing is shortened; and the belt itself slips, wastes power, and wears out.

In particular, the maintenance of costly leather belts is sadly neglected. Few mechanics have studied the structure of leather or the proper manner of conserving its power-transmitting qualities. Short-lived belts have been costly indeed in power wasted. Leather belts and rope drives will richly repay for proper care.

Woolen Weaves

INTERESTING GROUP INCLUDES INNOVATIONS

By George R. Stevens

◆ *Once more, in scouting for new weaves, Mr. Stevens has gathered together an exhibit of real interest to the wool designer.*

A NEW weave which may be classed as a modified crepe is illustrated in Fig. 1. The basis is a seven-harness diagonal, running three up, two down, one up, one down. The crepe effect is produced by an arrangement of the harnesses, which start with No. 1, skip to No. 3, and then proceed in the order of 5, 7, 2, 4, 6. The result is an open weave instead of an even diagonal twill. In the illustration of the woven effect at Fig. 2, it will be seen that the pattern shows spots in black and white, two threads in the warp and five picks in the filling, running in diagonal form. If the same weave should be dressed one black and one white and the filling arranged the same, an open or network effect in both warp and filling would be obtained, as in Fig. 3.

Both the black and white threads in the warp extend over a length of seven picks, while the filling extends over only five ends. When the pattern shows a trifle longer warpwise, it achieves a better balance. The two patterns could be woven as a stripe by dressing the warp 2x2 for 28 threads or more, and 1x1 for another 28 threads, while the filling is picked 1x1 as shown. Since the weave is on seven harnesses, it takes more repeats of the weave before the colors repeat on the same harnesses in Fig. 2. In that of Fig. 3, it is twice over.

A striped pattern, embodying a combination of four-harness twill and fancy weave is shown in Fig. 4, with the weave in Fig. 5. The yarns in this fabric are 4-run warp and filling; but if the material were brought out in 2- to 2½-run, a very good medium or spring weight for coatings would be developed. Care in carding and spinning is necessary to insure level yarns for the 1x1 pattern, both warp and filling.

A new pattern in an old weave, much used in recent years, is illustrated at Fig. 6. The pattern is a change from the old stereotyped bird's-eye design. It may be reproduced either in fine-spun woolen yarn or in worsted yarn. The reader will note that the dressing and weaving pattern is one black, one white, one black, one white, two black, one white, one black, one white, one black. The filling pattern is the same.

An attractive fabric with neat design is illustrated at Fig. 8. The weave, which is shown in Fig. 9, is unusual and not often seen on the market in this country. Fine- or medium-sized yarns can be used to advantage in light- or medium-colored warps and dark fillings.

A new design and woven effect intended for 2x2 dressing and weaving are illustrated in Figs. 10 and 11 respectively. The design is laid out for twelve harnesses to illustrate the complete pattern, but the reader will readily observe that it may be woven on six harnesses. It is particularly adaptable to high-speed automatics.

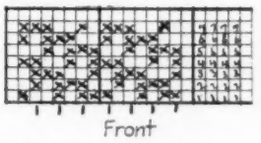


Fig. 1. Modified crepe weave

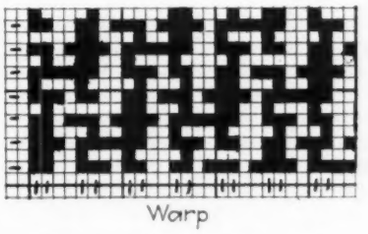


Fig. 2. Woven effect from Fig. 1

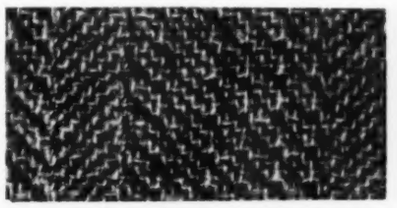


Fig. 4. Four-harness twill and fancy weave

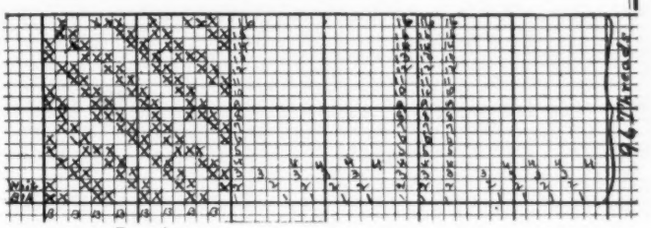


Fig. 5. Weave for fabric in Fig. 4

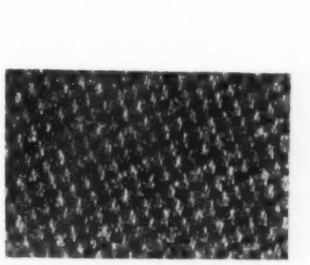


Fig. 8. Interesting imported fabric

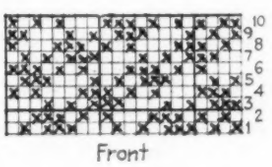


Fig. 9. Weave for Fig. 8

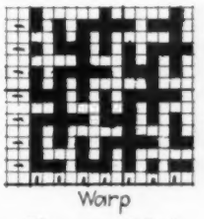


Fig. 3. Effect of change in patterning

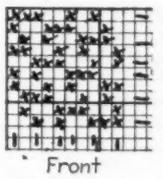


Fig. 6. Change from stereotyped birds-eye

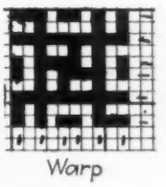


Fig. 7. Woven effect from Fig. 6

Fig. 11. Woven effect from Fig. 10

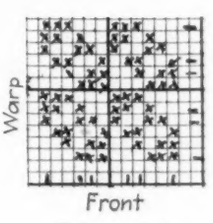


Fig. 10. Weave suitable for automatic looms

THIS DEPARTMENT—

offers a new subject for discussion each month and gives readers' comments on problems introduced in previous issues. The subject opened in February is closed and a summary of contributed ideas is given on opposite page. Overseers and others are invited to discuss the subject presented under the heading "How Shall Supplies Be Handled?" and other questions brought up in the super's talks. Letters accepted and published will be paid for without regard to length. Brevity is desirable.

▼

Overseers'

HOW SHALL SUPPLIES

"WE should have a better system of keeping track of supplies and repair parts," declared Superintendent Chase after the overseers had gathered in his office. "Just the other day we ordered some special gears for a machine in Bill's department and in less than a week he found six or eight gears of exactly the same type and size that we had ordered. They were behind an empty box in the supply room and had been there for months. I'm not putting the blame on anyone, for its the fault of our old system, or rather the absence of one in this particular case, and the responsibility is mine just as much as it is yours. However, we must work out a better way of handling our supplies and, as I know you must have been thinking along this line, let me have some good practical suggestions."

"My first recommendation," Bill began in his usual deliberate way, "is to have our supply room cleaned out and all empty boxes and other rubbish destroyed or carried away. If everything had been shipshape we would have found those gears in the first place. All that is needed is to straighten up the supply room, arrange everything in the proper order, mark all bins so that it will be easy to find machine parts, and let each overseer have a key to the door. The door should be locked at all times except when an overseer finds it necessary to obtain supplies or repair parts."

"No doubt that Bill is right about the need for cleaning up the supply room," Pete spoke up, "but that isn't the only solution to

Evening Schools For Textile Workers

Editor, Overseers' Round-Table:

Every mill should have evening classes for those who want to study textile problems. Of course, upon casual inquiry the men may not seem to take much interest in the proposed classes; their attitude is more or less, "Let us wait and see what will be taught and how." However, when the matter is explained properly, sufficient interest to make the classes very successful may be worked up in practically any mill.

The result of training the men in these evening classes will be twofold: First, it will fit some of them at least to fill better positions later; second, their study in evening classes increases their interest in the work of the plant. This naturally improves the morale of the plant since the worker sees that there is something to learn beyond his present knowledge of the mechanical phases of textiles. He acquires some vision of what his job means.

Evening classes in textiles have been in progress for several years in South Carolina. Many men who have received promotion can trace their start upward to the inspiration and knowledge they acquired in such classes. Clemson College Textile Department is unusually gratified with these results in that some 45 out of 300 of the teachers of evening classes in South Carolina are Clemson graduates. These classes consider such subjects as textile arithmetic, mill calculations, fly frames, spinning, loom fixing, and designing.

Superintendent Chase seems to think that the overseers have neither the time nor ability to teach. If he looks into the matter, he will find that many overseers make excellent teachers, especially under the system used in this state—namely, the itinerant teacher trainer furnishes each teacher an outline of the subject to be taught. The evening class often spells opportunity to the "forgotten man."

H. H. WILLIS,
Director, Textile Department,
Clemenson College.

Editor, Overseers' Round-Table:

During the boom days of '29 many companies were maintaining night schools for their workers. Of course there were some benefits, such as the improved knowledge of the company's products and how they were made; but, on the whole, the entire outlay was a loss. However, those were the "good old days" and expenses were laughed at. Now, such an attempt for any company would be suicidal.

The night school, to begin with, presents many complications. The question arises of just who shall attend, and whether they *must* attend or not. Many of the mill workers feel that when they have finished the day's work, they have earned their evening's freedom, and won't relish the idea of giving it up for school—even if for only one or two days a week.

Then there is the other side of the question. How about those who really want to learn and to have an opportunity to better themselves? This problem can be handled easily. Our plant maintains a bulletin board on which we list weekly a bibliography for our workers. In this list we cover all the fields of mill-working, and suggest which books are suitable for beginners, and which for those more advanced. In this way, we get those who are really interested, and only those. The books can be obtained at the public library. Thus, we succeed in having our workers draw library cards—and once in the library, their personal education takes care of itself. It is a psychological fact, well known, that the best education is one which is sought by one's own self and not one that is forced upon the individual.

A. B.

Editor, Overseers' Round-Table:

Every encouragement should be given the young man in the mill to attend evening school. In nearly all the larger textile centers there are textile or industrial schools with evening courses, sponsored by the state, the city and the manufacturers, which draw students from a radius of 20 or 30 miles. If a mill is so located that it is impossible for its workers to have the advantages that these schools offer, it should establish the best substitute possible in its own plant. Many of the overseers and executives are textile school graduates, and are capable and willing to help those who are ambitious enough to

Round-Table

BE HANDLED?

our troubles. We might get everything in the room in apple-pie order today but, unless one man has full responsibility for keeping the supplies that way, it won't be long before the place will look like another cyclone had struck it. Let's try a new plan. Keep everything in the way of supplies, including oils, starches, gums, brooms, grease, paint, soap, chalk and the thousand and one things that are scattered throughout the mill, in the supply room, in addition to parts and accessories for all machines. Work out a system of keeping a perpetual inventory of all these items and also arrive at a maximum and minimum quantity to keep on hand. Employ a young man to have complete charge of the supply room and do not allow anyone to take out a single nut or bolt without it being issued out by the man in charge. It is my opinion that we can save enough to pay the extra man's salary by being able to operate with reduced inventory of supplies and parts. There will be less time lost in looking for items, too, and the records will help to figure more accurate costs for each department."

► **Would you favor Pete's plan of having a central supply room in charge of one man who would handle all stocks of machine parts and supplies and issue items upon requisition of the department heads? Or would you prefer to have the supply room locked and allow each overseer to have a key and free access to the supplies and machine parts?**

seek that help, therefore the schools could be established without undue expense. The results would certainly justify any outlay of time and money.

I have had the opportunity to observe many students of evening textile schools and have yet to see that education makes the student feel that he knows more than his overseer. It is only the ignorant overseer who is afraid to have his subordinates learn. Attendance at evening school, after working all day in a factory is not easy, and sticking to it for four years is a test of character not to be ignored in selecting candidates for promotion when vacancies occur.

OVERSEER.

Editor, Overseers' Round-Table:

In a progressive industry such as ours, with methods and conditions constantly changing, there is always a demand for men of a high grade type who think enough of their jobs to study and improve themselves outside working hours. These men deserve encouragement, and what is more essential, a chance to acquire the knowledge they seek under the best possible conditions. In my opinion, there could be no better location for evening textile schools than in the mill itself.

There, in familiar surroundings, the worker in one department could obtain practical knowledge of the other processes necessary to the finished product, thereby become more useful to his employer, and consequently obtain an increase in his earning power. Unfortunately, this ideal condition often is difficult to attain, in most cases due to the lack of ability of overseers to impart the knowledge that they possess.

The mill may instead offer employees free correspondence courses.

Whatever method is adopted, there is always a valuable addition which should never be neglected; that is a mill library supplied with the latest textbooks and technical magazines. One concern in an outlying district of Maine, maintaining a shop library, is said to have found that a group of workers had formed a discussion group where each week some interesting topic, culled from the technical magazines, is discussed. These men, needless to say, are keeping abreast of modern trends and developments in the industry in a manner beneficial to all concerned.

ROBERT S. ALEXANDER.

Editor, Overseers' Round-Table:

It would be a wonderful thing if every young fellow in the mill could be given the opportunity to improve his knowledge of textile manufacturing by means of organized evening classes. Every industry is realizing at this time in particular, when everything is at rock bottom, the need of more efficiency, and if a man is given theory as well as practical experience he will be doubly valuable, for the two work hand-in-hand.

With few exceptions those who attended evening classes would be more interested in textiles, really interested in learning more about the details—things they would learn in no other way. These men would be on call for bigger jobs. The overseer would get to know the amount of brain power each man had; would get to know them better, and after all, as far as the men feeling that they know more than the overseer—we meet that condition anyway, and I do not feel that evening school would encourage such feelings.

Bill said the men would become impatient and feel that they should get promotions. I ask you, "What man worth his salt isn't impatient for promotions, anxious to get ahead?" I do not feel that evening school would change this condition. It would, however, give a man more confidence when asked to take another job.

Bill also speaks of textile journals and library books as sufficient substitutes. No book can ever hope to compete with the personal touch that one gets when studying in a class under a good instructor, and being with others where there is a chance for discussion and debate.

ARTHUR HUDSON.

SUMMARY

EVENING CLASSES FOR WORKERS. Over 80% of the replies favored operation of evening classes for employees of textile plants. It was majority opinion that reasonable expenditure by mills for schools would yield return to justify the cost. The benefits would be felt in improved efficiency, better morale, and a stronger organization from which to draw men for promotion. In some States evening classes are financed from public funds and there is little, if any, cost to the mills. Contributors opposing evening classes, argued that such instruction tends to make workers dissatisfied, that the ambitious men will learn through other channels, and that some workers will feel obliged to join the classes to stay in the good graces of their superiors. Mill libraries were suggested as being more important than textile courses.

▼

QUESTIONS AND ANSWERS

Level Dyeing on Wool Goods

Technical Editor:

We shall appreciate your advice as to the most satisfactory process for treating worsted yarn or wool piece goods, which have been peroxide bleached and sulphured, in order that the goods can be dyed absolutely level in shades other than black. Would better results be obtained by using direct colors instead of acid colors? (7971)

There are several recently introduced materials which may be used in conjunction with scouring and dyeing and which eliminate many of the difficulties that have formerly beset the wool dyer. These new materials are characterized by their wetting-out properties, and ability to emulsify oils and greases, prevent formation of lime and other insoluble soaps, and to promote level dyeing. We advise you to investigate them without delay.

Regarding bleaching, many bleachers believe that they obtain the best results by the use of peroxide alone, as sulphur dioxide does not always give uniform results in bleaching, especially when the bleached material is to be dyed, although its irregularities may pass unnoticed as white goods. There is a tendency for the wool to be unevenly acidulated, and the take-up of the dye follows this quite closely.

If the wool is clean and uniform in nature, there is no reason why the fast, level-dyeing acid colors will not give satisfactory results. When greater fastness to washing or salt water is needed, you may use a series of neutral-dyeing wool colors, together with a small amount of acetic acid. As a rule, we would not recommend the use of direct cotton colors, because they require a long boiling to affix them, and this is not good for the material. There are acid dyestuffs containing chromium which will give excellent results and stand light and washing; these are becoming popular, as they meet most of the requirements of the trade and give little trouble in the dyehouse.

▼

Crepe Filling Irregular

Technical Editor:

Inclosed please find a small sample of an acetate-yarn warp and natural-silk crepe filling. This crepe is made up of all one-way twist consisting of three-thread crepe 60/65 turns and four ends of regular 20/22 twisted around the crepe with seven turns. These goods measure 47 in. off loom and are shrunk to 39 in. in finishing. However, we find that they do not shrink evenly, averaging from 38 in. to 40 in. Another bad feature is that the crinkle effect runs very irregularly. Do you believe that this is caused by the manner in which the filling is made up? Would you suggest weaving this with one or two shuttles? Any information you can give me will be appreciated. (8005)

We find that the imperfections to which you refer are due to filling trouble. The twist shows a variation of turns as high as ten per inch. In quilling filling of this

type and construction, attention must be paid to the tension; otherwise the variation will cause the fabric to crinkle unevenly and pull in the fabric unduly at irregular places. We also suggest that you run this type of fabric with two shuttles, which will break up the irregularities in the filling and produce better results. There appears to be nothing wrong with either the finishing or the dyeing of this fabric.

▼

Condensing Harnesses

Technical Editor:

Is there any rule which can be followed in making the following calculation: A fabric has more than 16 harnesses and it is necessary to condense it down to 16 or less? (7964)

There is no set rule for condensing harnesses. Experience is the sole guide. The only way that we know of on white goods is to ascertain the principle of the first weave, and then try to reproduce it as nearly as possible on the desired number of harnesses. On colored goods, draw out your color scheme and then try to work out the color effect on the desired number of harnesses.

▼

Conditioning Rayon Crepe

Technical Editor:

Will you kindly inform us what temperature we should have in a steam box where we are conditioning rayon crepe yarn, 50/55 turns, on aluminum-head spools. At present we are steaming at 6-lb. pressure for about 1 hr. We are informed that by increasing our pressure we might decrease the time of steaming without any bad effect on the yarn. We should also like to know if the rayon crepe will tender or burn if it comes in contact with the aluminum head in a hot steam box. (7995)

The length of time required to set the twist in rayon crepe yarns depends upon the denier, type of yarn (whether acetate or viscose), and the size and density of the package. If the yarn is of a type other than acetate, usually 20 min. is sufficient in a steamer of the cabinet type in which no pressure can be maintained. As it is the hot moisture, rather than the heat, which sets the twist, a water jet in a 15-lb. steam line will speed up the process. Steam at this pressure is hot, but the water jet reduces the temperature and increases the moisture. The chief advantage in using more than 6-lb. pressure is that the steaming cabinet is filled more quickly with vapor.

Synthetic yarns, other than acetate, will not be damaged by aluminum heads; but if the spools are put in the steamer cold, condensation will take place on the head, wetting the layers of yarn next to it. As the density of the spool prohibits ready drying, the yarn may be stretched in winding or subsequent processes. Condensation may be overcome by turning on the steam for a brief time without the water.

Acetate yarns steamed in a like manner must be watched carefully, and the temperature must at no time exceed 180° F., as excessive heat will either modify the yarn so that it will dye improperly, or melt the yarn into a mass next to the head. It will be found that acetate yarns will take longer to set, due to their poor affinity for moisture. The quickest method of conditioning acetate is in a cast-iron steam box which can be evacuated to a vacuum of 20 in. When the steam and water are turned on, the vapor is drawn into the spool, and yarns of the twist in question are conditioned in 10 to 12 min.

▼

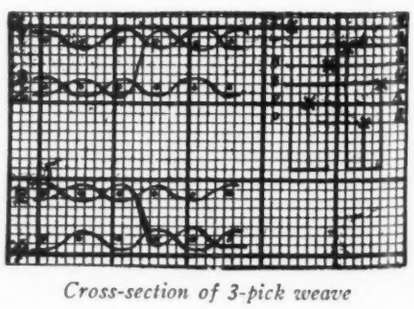
Transparent Velvets

Technical Editor:

I have found the different design articles that you have published from time to time very interesting, and I have enjoyed reading them and also going over the different weaves that you have published. However, in the article entitled "Transparent Velvets," by Maurice N. Roux, there is a weave which I do not think is practical. I refer to the three-pick weave.

The draft, cam set-up, and cross-section show the pile working with the warp in the same dent, which I understand is against the principle of weaving pile fabrics. I have worked on velvet and plush for twenty years and have seen the difference with the pile working with the warp in the same dent and the pile working with the warp in the next dent. I am sure that if the two pile cams were reversed so that the pile would be working opposite to the warp in the same dent, there would be a big improvement, and the result would be more like the four-pick weave that he has given full detail of. Although we know that we cannot expect to get the same result with 3200 pile ends that we get with the 3900 pile ends in the same width, the accompanying cross-section of three-pick weave is, I think, as it should be for the draft published. ARTHUR HUDSON

We have submitted this suggestion to Mr. Roux, who replies as follows: "I agree with the statement that it has been a generally accepted principle that the pile warp should weave contrary to the ground warp when the ends are in the same dent in the reed. However, in experimenting with the fabric in question we found that,



Cross-section of 3-pick weave

QUESTIONS AND ANSWERS

in our estimation, the cloth wove equally well either way. We could find no reason why this was so, unless the nature of the material combined with the weave made it possible."

▼

Crepe Bandage

Technical Editor:

I am enclosing three samples of crepe bandage. Sample No. 1 is a type now being produced and sold in retail stores. Sample No. 2 is a piece which I wove by using left- and right-twist yarns in the warp. Sample No. 3 is the same as No. 2, but has been finished. All of the samples have over 40 turns per inch in the ply for both the regular- and reverse-twist warps, although the yarn I used had about 50 turns per inch before weaving. I have not been able to produce a sample with as much stretch and elasticity as Sample No. 1. Can you tell me the usual process of manufacturing this type of bandage? Is it desirable to use a heavy or light tension on the warps while weaving? What is method of shrinking? (7957)

It is necessary to apply considerable tension to the warps when weaving this type of material; and the uneven appearance of both your finished and unfinished samples indicates that an insufficient amount of tension has been applied. The two different types of yarns used in the warp are generally wound on separate warp beams. The material may be shrunk by boiling it in a kier for about 8 hr. A small quantity of strong soap or regular kier-boiling compound should be added to the water in which the goods are boiled. After boiling, the fabric should be extracted and then dried.

▼

Cotton Voiles

Technical Editor:

I am planning to make a cotton voile to be printed and sold to the trade as a cheap substitute for the silk voile. I intend to employ 56 ends of warp per inch and 56 picks per inch of 60 single yarn, and I would like to know if it is necessary to make the warp and the filling with some special twist and whether the warp and filling should be made with one end right twist and one end left twist in order to obtain the perfect squares between the intersection of the warp and filling ends. Should you have a better construction for voiles please furnish it, indicating the proper twist for the warp and filling and whether both right and left twist should be used. I make the voile with yarns from 40s up to 60s. (7955)

A construction of 56x56, using 60/1 warp and filling, would make a very sheer cloth. We would advise a construction of 60x56 with a twist multiple of 4½ times the square root of the yarn count for warp and filling. This would give about 34.75 turns per inch to the warp and filling yarns. This is sufficient for a voile fabric that has to be printed.

The most popular voile construction for printing purposes is, as follows: 60x56; 50/1 warp, 35 turns; 50/1 filling, 35 turns.

The regular twist for a good voile yarn is 6½ times the square root of the count, or about 50 turns per inch of twist.

The interstices are obtained by reeding the warp one end per dent and being sure the loom is set and timed to give an even distribution of the filling. Drawing the warp one end regular and one end reverse twist will not distribute the ends evenly unless they are reeded one per dent. Weaving the filling one pick reverse twist and one pick regular twist would require a pick-and-pick loom. This would make the cloth difficult to weave, and the cost would be prohibitive.

▼

Tension in Elastic Warps

Technical Editor:

We hope you will be able to give us some assistance as to the proper way of making elastic warps. We do not seem to be able to get our warps at an even tension, with the result that they buckle after weaving for a short space. Any information you might be able to forward to us would be greatly appreciated. (7986)

We shall assume that the rubber thread is purchased from a reliable factory and that all of the ends in the chain are of equal tension when received. The thread should then be unlinked into smoothly sand-papered wooden boxes or canvas baskets. From the basket or box the rubber is wound on to a mill, and it is probably at this point that your trouble begins.

The mill is a reel 72 to 96 in. in circumference and 5 to 6 ft. long. It may be power-driven or hand-driven. It is placed in a room that has a very smooth wooden or concrete floor. The basket or box containing the unlinked chain is placed at a distance from the mill of not less than 60 ft.; and the intervening space, as well as the guide of the mill and the edges of the box or basket, are well dusted with talc or soapstone.

The beginning of the chain is then taken from the basket and brought to the mill, being lubricated by the talc as it sags along the floor. If there are a great number of ends on the chain, it may be split into sections corresponding to the number of ends required in each warp beam, and then the ends are fastened to one of the bars of the mill. While one operator watches the rubber warp as it is wound on the mill (occasionally plucking at the ends of the different sections with his fingers to change the relative positions of the ends and thus help to even the tension), another operator permits the chain to be drawn from the basket through his hands, applying only sufficient tension to hold the warp at a distance of 6 to 8 in. from the floor at the low point of the sag. The right hand of the second operator is usually held stationary, while the left hand is motivated in a quick rotary manner that serves to separate the various threads of the chain.

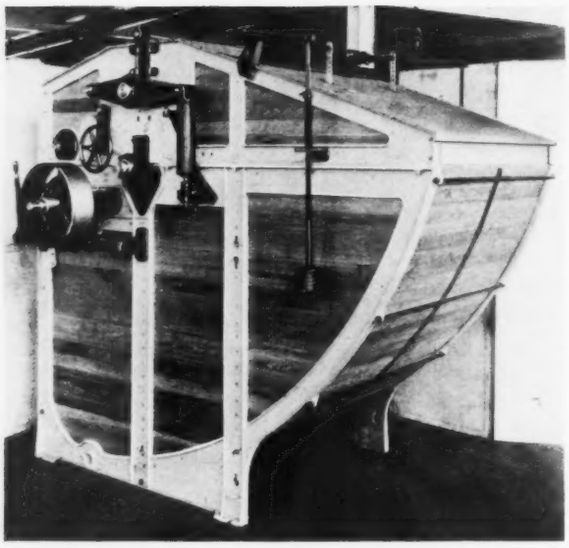
When the end of the chain comes up out of the basket, the operator grasps it firmly and permits himself to be drawn forward toward the mill, still maintaining the same degree of tension. A brake is then set on the mill and the ends secured while the next chain is brought toward the mill. The individual ends of the two chains are then tied together, a square knot being employed for the purpose. The foregoing operation is repeated a sufficient number of times to produce the required yardage per section, and then another section is started—the number of sections made being a multiple of the number of rubber warps to be made at one time.

From the mill the rubber is wound onto the loom beams. The machine used for this purpose usually accommodates four to eight or ten beams and resembles a common narrow-fabric warper. The warping machine is placed at the same distance from the mill as was the receptacle from which the chain was drawn, and the tension is effected by one operator holding back the rubber (by means of the bars of the mill) sufficiently to hold the warp 6 to 8 in. from the floor. Meanwhile, the other operator is manipulating the guides at the warper so that the rubber will be wound evenly on the beam, keeping each rubber end free in its particular dent. The rubber should not be wound too tightly on the beam; otherwise it will lose its life if not soon used.

The rubber warp should be placed only an inch or two below the level of the back frame of the loom; and immediately after being drawn from the beam, the warp ends should pass over a felt or canvas pad that has been well dusted with talc. The method of applying tension to the rubber warp is by means of an apron of canvas or other cloth. This apron should be the full width of the rubber beam and of sufficient length to permit one end to be fastened to the back of the loom frame, and to permit the attachment of weights at the other end. A sufficient amount of weight should be applied to keep the rubber taut at all times; and the greater the amount of weight applied, the better the product.

To even the rubbers in a warp that is in the loom and has been weaving, proceed as follows: First, raise the rubber harness or harnesses and place a cord under the rubber ends in front of the reed. Next, level the rubber harnesses and loosen the rubber warp sufficiently to draw off about a foot of warp, after which the tension may be replaced on the rubber beam. Now cut the rubber ends at the point where they enter the fabric and with the left hand draw the rubber ends out about an arm's length. Grasp the taut rubbers close to the reed with the right hand and then bring the left hand toward the right hand sufficiently to take all the tension off the rubbers. The slack ends will then be quite apparent. Release the rubbers in the left hand and permit the ends to hang down loosely a moment. Then grasp them again near their ends, again draw them out to arm's length, and finally release the grip on the right hand. This operation should be repeated until slack ends disappear.

NEW MACHINERY



High-Production Fulling Mill

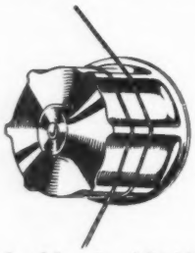
MODEL 26, a high-production fulling mill, designed to give the woolen and worsted finisher equipment offering the advantages of the iron-clad mill, but at a lower cost, has been placed on the market by James Hunter Machine Co., North Adams, Mass. Characteristics in which the new machine differs from the Model 30 are that the cast-iron sides have been eliminated and a 20x6½ in. driving pulley mounted on a countershaft has been substituted for the 36x12½ in. pulley mounted on the bottom roll shaft.

The new mill is said to retain all the advantages of the Model 30 (TEXTILE WORLD, Nov. 2, 1929 and July 26, 1930), and due to the use of the small pulley on the countershaft, to possess the following additional ones: A lighter belt can be used to drive the machine; a larger pulley can be used on the counter, eliminating belt slip and making for longer life of the belt; where main counter in the room is running at a fairly high speed, it is not necessary to install an extra counter and get down to the slow speed of the mill, since on the new drive the pulley is running from 360 to 400 rpm.; if motor drive is desired, it is a simple matter to mount the motor in back of the machine on the floor and drive directly up to the pulley on the new drive with a belt without inserting considerable gearing and extra jackshafts and bearings; the clutch being lighter, throws in and out more easily; first cost and replacement costs of belts are lower.

Cork-Covered Spindles

CORK-COVERED, wood-head spindles for silk and rayon winders which facilitate renewal of the corks when required have been placed on the market recently by Collins Supply & Equipment Co., Scranton, Pa. The spindles are supplied in either the threaded or spring type, and with steel heads if extra weight is desired.

Doubler-Twister Feed Roll



FOR use on silk and rayon doubler-twisters, a new feed roller has been developed by B. L. Bloom, superintendent of Dubois Silk Throwing Co., Dubois, Pa.; and is being produced and marketed by Reese & Monnia Machine Co., 420 Pine St., Scranton, Pa. Its design, clearly shown in accompanying drawing, is intended to afford a positive grip and to permit operation on any number of threads with one lap and without a separator. The inventor states that the new roller permits an operator to handle larger parts, as the threads can be lapped on the roller more quickly. Improved twist and elimination of roller laps are claimed.

Rayon and Spun Silk Warp Sizer

EXACT control of stretch and of the heat applied to yarn are features of the improved warp sizer offered by Charles B. Johnson, Paterson, N. J. This development involves the application of the cotton system to the sizing of synthetic yarns and spun silk. This machine is said to be particularly suitable for sizing acetates in which low temperatures are necessary.

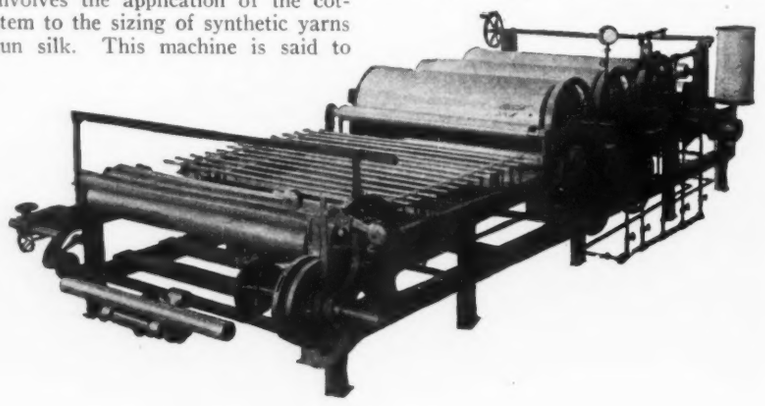
The quetsch in the new Johnson machine is so designed that it gently draws the warp from the various section beams with a dry nip in such a manner, according to the manufacturers, as to insure equal tension on all the ends. The warp is first fed to a point where the solution is applied and then, by means of a variable tension control, to the drying cylinders. The take-up has been especially designed to receive all types and widths of loom beams and is ball-bearing throughout.

For securing the desired tension between draw rolls and drying cylinders, there is an arrangement by which the drying cylinders are driven from the draw rolls through machine cut bevel gears, the shaft of which is mounted on Fafnir self-locking ball bearings. The necessary tension is obtained merely by changing a gear, thus eliminating the old method of building up the draw rolls to suit the required tension. The machine is equipped with an electric predetermining counter which will produce a signal when the required yardage is reached.

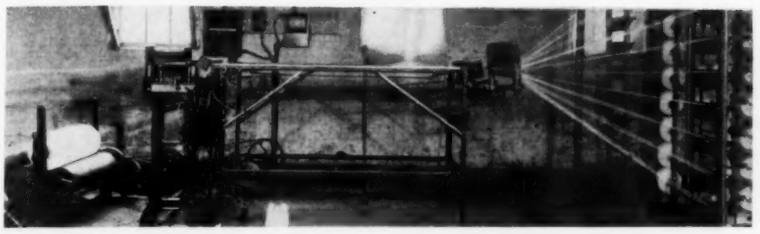
Automatic Singeing Machine for Yarn

THE automatic singeing machine shown in the accompanying illustration has been placed on the market by Elliott & Myers, Inc., High Point, N. C. The new machine is designed to operate on spool-creel warpers, cone-creel warpers, or from one warp ball to another, at low or high speeds. In the past, according to the makers, it has been considered almost impossible to operate a singeing machine on spool creel warpers, but tests are said to demonstrate that the new machine works equally as well on a spool creel warper, largely because of the automatic operation of the burners and the tripping device on the auxiliary burner.

The automatic singer, which may be installed between the creel and the warper, is simple in operation and starts at the same time as the warper. When the foot pedal is pressed to start the warper, it also operates the two burners on the singer. If an end breaks, the gas flame of the main burner is cut down and the yarn is lifted several inches above the burner, and at the same time a shield covered with asbestos comes between the burner and the threads as a protection. The momentum of the



AND PROCESSES



warp rolls causes the ends to run past the main burner after the machine has cut off, thus leaving a few feet of unsinged yarn. To take care of this situation, an auxiliary burner is provided, which comes on when the machine is started and then cuts out automatically. There is a latch arrangement which cuts out the auxiliary burner in case the main burner should trip because of a broken end in starting up the machine.

The machine is said to require little floor space and can usually be placed between the creel and the warper with but few changes. Burners are semi-elliptical on the bottom and are flat on top. The flat side is about 3½ in. across and on a single high-speed warper has 1,450 small holes drilled through to the center which is hollow. This broad burner is said to give a long mild flame which completely surrounds the threads, and the amount of singeing may be adjusted to remain constant until changed. This equipment operates on city gas, bottled gas, or from a vapor system. The machine shown in the accompanying picture is installed in the High Point Yarn Mill, where, by combining the warping and singeing process, costs are said to have been reduced.

Rayon Pot Spinning Machine

WICACO Machine Corp., Philadelphia, announces an improved rapid traverse on the Wicaco No. 5 pot spinning machine. Although the general practice, according to the makers, is for the maximum number of strokes not to exceed 40 per minute in order to produce a sufficiently open wind for the successful treatment of the cake in washing, desulphurizing, and bleaching, the new machine has been developed to obtain 100 strokes per minute if future practice requires this speed. Elliptical or oval gears, combined with special cams, designed to compensate for the variation in speed caused by these gears, are said to eliminate the shock and vibration usual at high speeds. The machine is equipped with regular Wicaco Godet wheels which can be replaced while the machine is in motion. All metal parts are covered with glass, to prevent corrosion and contamination of the spinning bath. Spindle motors are readily accessible, and the motor rails can be adjusted for any motor.

Another improved feature is the new roller traverse guide which is self-adjusting as to the tension of the rollers, and when in operation, is completely enclosed and protected from splash and fumes. The machine is equipped with a circulating-type piston pump which has adjustable delivery.

Card and Spinning Room Gages

SACO-LOWELL Shops, Boston, recently introduced to the trade five gages for obtaining correct machinery settings and adjustments in card and spinning rooms. The mote-knife gage, illustrated in Fig. 1, makes possible an accurate adjustment of the angular position of mote knives with respect to the licker-in. The gage is first set at the proper predetermined angle which centers the bubble in the center of the gage. Then it is hooked over the knife, as shown, and the angle of the knife changed until the level shows it to be correctly set. Thus both ends of the mote knife can be set with true accuracy.

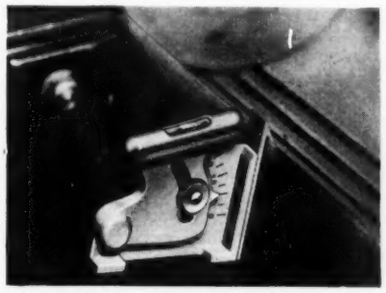


Fig. 1

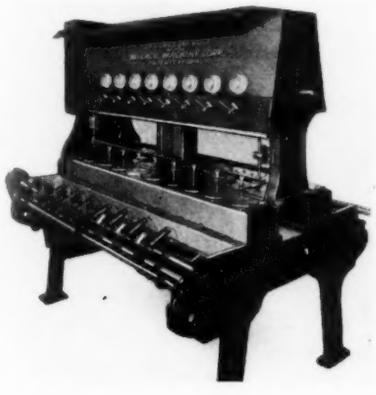
Another new gage is for measuring the diameters of trumpet holes. This device, shown in Fig. 2, made of accurately ground, tapered steel, measures holes ranging from .100 to .250 in. in diameter. The makers have prepared a table showing the proper bore for slivers of different weights and the number of drill required to obtain these diameters. There is also a four-step trumpet gage for setting the trumpet at the proper distance from the calender-roll nip. Other gages are for setting the roving steel rolls and for obtaining proper and uniform settings of spinning cap bars. These gages are furnished in sets, conveniently boxed, or they may be obtained individually.

Universal Yarn-Numbering Balance

ALFRED SUTER, New York, has announced the Universal yarn-numbering balance, for which he is the exclusive distributor in the United States. The new balance is manufactured by the Roller-Smith Co., Bethlehem, Pa. This device, which is provided with a means for convenient preparation of specimens, is designed to give accurate and quick measurement of yarn numbers of any kind of yarns from short lengths. The dial is graduated in counts from 10s to 300s, but coarser numbers may be measured, while the balance has also a graduation with range of 0 to 55 milligrams with readings to 1/10th milligram for general weighing purposes.

Foot-Candle Meter

LIGHTING surveys can be simplified by the use of a compact foot-candle meter recently placed on the market by the Weston Electrical Instrument Corp., Newark, N. J.



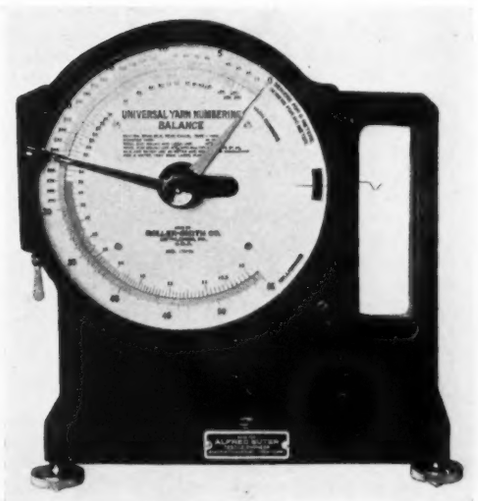


Fig. 2

NEW PUBLICATIONS

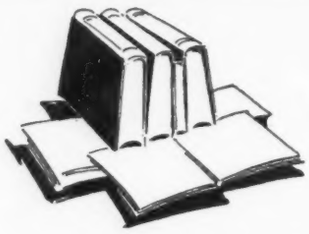
LATEX AND ITS INDUSTRIAL APPLICATIONS; by Frederick Marchionna; Rubber Age Publishing Co., New York; Price $15.

This volume consists of a compilation, classification, and digest of all the important references to latex and its uses. It comprises abstracts of 1887 patents and over 600 scientific or technical papers. With the increasing application of latex in textile fabrication and finishing, this work should be of interest and value to all textile men who are using or contemplating the use of this material. Representative of the classifications which make for ready reference are the following: adhesive and coating materials, non-fibrous plastic products, fibrous products, and electrodeposition of rubber. The abstracts, while necessarily brief, are lucid.

A SECOND INDEX OF PATENTED MOTHPROOFING MATERIALS, by R. C. Roark, U. S. Department of Agriculture.

This compilation lists the mothproofing agents patented since publication in 1931 of the author's first Index, and gives additional references to many of the compounds mentioned in that work.

ENCYCLOPEDIA OF COTTON FABRICS; Fifth Edition, by Walter Hough; John Heywood, Ltd., Manchester, England, Price 3s. 6d.



In the latest edition of this handy little work there have been added descriptions of several fabrics not hitherto included, and definitions of some of the older fabrics have been amplified or amended.

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Business Literature

Ceramic Material. American Lava Corp., Chattanooga, Tenn. Pamphlet describing "Alsimag," new ceramic of hardness corresponding to good grade of tool steel, used as thread guides.

Boiler Tubing. Steel & Tubes, Inc., Cleveland. Illustrated circular describing "Electrunite" boiler tubes which are made by electrical resistance welding of steel or rust-resisting Toncan Iron.

Steam-Water Mixer. Fulton Sylphon Co., Knoxville, Tenn. Booklet showing the Sylphon steam-water mixer which is thermostatically controlled. Engineering data, diagrams and capacity tables given.

Dyestuffs. National Aniline & Chemical Co., New York. March issue of *Dyestuffs*, quarterly house publication, containing articles on the influence of direct sunlight on vat colors in the reduced state, some causes of damage in machine printing, and the boil off, dyeing and finishing of dress velvets.

Chemicals. The Roessler & Hasslacher Chemical Co., New York. Price list of R. & H. chemicals for all industries.

Clutch. Engineer's Specialty Co., Chicago, Ill. Description of one-way freewheeling clutch for industrial installations.

Conveyor Belts. Diamond Rubber Co., Inc., Akron, Ohio. Illustrated booklet, "How Shall We Handle It?", showing conveyor belts in use under widely varying conditions.

Hard Rubber. American Hard Rubber Co., New York. Catalog No. 1 showing many industrial uses for hard rubber, and describing the physical, chemical and electrical properties of hard rubber.

Chemicals. Glyco Products Co., Inc., New York. Booklet containing new emulsion formulae and miscellaneous data on emulsifying agents, synthetic waxes, resins, etc.

Pumps. Economy Pumping Machinery Co., Chicago. General catalog describing complete line of pumps.

Thermometers. Foxboro (Mass.) Co. Illustrated booklet showing construction and installation of various types of recording thermometers.

Electrical Installations. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Booklet—"Engineering Achievements of 1932"—containing reprint from January issue of *Electric Journal*.

Power Plant Equipment. Foster Wheeler Corp., New York. General catalog, loose-leaf form, describing steam generators, water walls, superheaters, economizers, condensers, centrifugal pumps and other kinds of power plant equipment.

BUSINESS NEWS

Sonoco Products Co. of Canada, Ltd., Brantford, Ontario, will begin operations this month, manufacturing paper tubes and cones under the patent rights held by Sonoco Products Co., Hartsville, S. C., with which the new company is affiliated. Newly designed machinery for equipping the Canadian plant was made in Hartsville. W. J. Westaway Co., Ltd., of Hamilton, Toronto, and Montreal, are exclusive sales representatives for Sonoco products in Canada.

Burnham & Ingalls, New York, was formed as of April 1 by R. E. Burnham and E. D. Ingalls to act as sales agent for six textile machinery firms. Mr. Burnham has been with the Textile Finishing Machinery Co., Providence, R. I., since 1913 and has been in charge of that company's New York office since 1920, which was the year Mr. Ingalls joined the organization. The new firm will continue to represent the Textile Finishing Machinery Co. operating from its previous location at 50 Church Street. The five other concerns to be represented are the following: Grand Rapids (Mich.) Textile Machinery Co.; Gaston County Dyeing Machinery Co., Stanley, N. C.; Blake Electric Mfg. Co., Boston on Schwartz electric guide; James Hill Mfg. Co., Providence, roving cans and mill recepticals; F. J. Stokes Machine Co., Philadelphia, on flat cutters and staple cutters.

William A. Butler has severed his connection with the Textile Soap & Chemical Co., Mystic, Conn., to devote himself to textile consulting work, particularly on processing and finishing.

General Air Conditioning Co., Inc., New York, has been formed with offices at 155 East 44th Street. M. Hitchen, president, and A. H. Clogston, vice-president, were formerly executives of the Cooling & Air Conditioning Corp. David H. Knowles is secretary of General Air Conditioning Co., which will offer complete engineering service in design and installation of industrial air conditioning systems.

American Blower Co., Detroit, is now headed by Clark T. Morse, formerly vice-president, while James Inglis, formerly president, becomes chairman of the board. Mr. Morse has been with the company since 1912.

Herbert R. Mauersberger, textile consultant, will conduct a general textile consulting service from his offices and laboratory, 305 Washington Street, Brooklyn, N. Y. The work includes solution of problems, expert testimony, lectures and private instruction.

Taylor & Co., Inc., Morristown, Pa., is erecting a new plant to be ready in May for production of complete line of vulcanized fiber, fish paper and laminated phenolic products including noiseless gears. J. M. Taylor is president; L. T. McCloskey, sales manager; C. N. Jacobs, plant manager, all of whom formerly held similar positions with Diamond State Fibre Co. and its subsidiary the Celeron Co.

Glyco Products Co., Brooklyn, N. Y., has awarded a fellowship in the Textile Chemistry and Dyeing Department of the School of Textile Engineering at the Alabama Polytechnic Institute, Auburn, Ala. Direction of the fellowship will be under Prof. C. B. Ordway. Investigation will be conducted as to new uses in the textile field for Glyco products.

Strong, Carlisle & Hammond Co., Cleveland, Ohio, as national distributors, have available, from stock, the Lenney variable speed transmission in sizes up to 1½ hp.

C. P. Gulick, president of National Oil Products Co., Harrison, N. J., has announced plans for the immediate erection of a four-story building which will add 50,000 sq.ft. floor space to the present plant. This expansion, according to Mr. Gulick, has been made necessary by the company's numerous successful new products. The company, originally making sulphonated oils for textile and leather trades, has expanded its activities to include products for food, cosmetics, paper and various other fields.

Scovill Mfg. Co., Waterbury, Conn., has been licensed by the Dardelet Threadlock Corp. to manufacture and sell "Rivet-Bolts" and other bolts and nuts with the Dardelet self-locking thread.

John Beard, formerly with the Sharples Specialty Co., Philadelphia, is now associated with the Haveg Corp., Newark, Del. Rights to manufacture Haveg in this country were recently acquired by the Continental Diamond Fibre Co.

THE PERSONAL PAGE

William C. Durant has resigned as a member of the board of directors of the Industrial Rayon Corp., to devote more time to other projects.

W. **Ward** has been elected president of the Providence (R. I.) Dyeing, Bleaching & Calendering Co.

Benedict Ernstein, vice-president, director and member of the executive committee of Commercial Factors Corp., has resigned all three posts.

M. **S. Clarke,** Halifax, N. S., has been elected president of Atlantic Underwear Co., Moncton, N. B.

W. **G. Irwin,** a director of R. M. Ballantyne, Ltd., Stratford, Ont., has been elected president of that company succeeding the late Kenneth C. Turnbull.

Dr. **L. L. Self,** of Cherryville, N. C., president, Carlton Yarn Mills and Nuway Spinning Co. there, has been elected president of the Cherryville National Bank.

John **A. Law,** president Saxon and Chesnee Cotton Mills, Spartanburg, S. C., has been appointed "conservator" of the Central National Bank, Spartanburg.

R. **W. Jordan** has been elected president of the Virginia Textile Corp., formerly the Morrell Mills, Inc., Emporia, Va.

B. **F. Hagood,** of Easley, S. C., was elected president of Glenwood and Pickens Mills, at a meeting held March 23. He succeeds the late **C. Bruce Hagood.**

David **Duncan,** of the Lonsdale Co., Lonsdale, R. I., has been chosen president, and **Robert L. Anthony** of the B. B. & R. Knight Corporation, vice-president, of the Rhode Island Textile Association.

R. **M. Bundy** and **H. D. Jobe** were elected vice-presidents of the Adams-Millis Corp., High Point, N. C., at the annual meeting, March 15.

W. **W. Glenn,** Lincolnton, S. C., head of a corporation operating the Melville and Saxony Mills, near Lincolnton, has been appointed general manager of the D. E. Rhyne estate and will operate the Lincoln Cotton Mill and Laboratory Mill, near Lincolnton; Cherryville Mfg. Co., Howell Mfg. Co., and the Wildan Mfg. Co., of Cherryvile, N. C., all Rhyne properties.

Glenn **L. Gardiner,** assistant to the president of the Forstmann Woolen Mfg. Co., of Passaic, N. J., has been elected to the board of directors of Elliott Service Co., New York.

Joseph **E. Stone,** vice-president of the Stanley Works, New Britain, Conn., has been elected a director of the American Hosiery Co., New Britain, Conn.

George **Schwab,** formerly with Boettcher, Newton & Co., has been elected treasurer of the Associated Dyeing & Printing Co., Inc., New York.

William **E. Kern, Jr.,** has resigned as treasurer of the Taber Mill, New Bedford, Mass., and he has been succeeded by **Robert G. Ferguson.**

Lawrence **Marx,** of Cohn-Hall-Marx Co., **Arthur B. Borden,** of M. C. D. Borden & Sons, Inc., and **Lester R. Walls,** of the Riverside and Dan River Cotton Mills, have been elected directors of the Textile Fabrics Association.

Willard F. Staples has resigned as treasurer and general manager of the Lawton Mills Corp., Plainfield, Conn., to take the same position with the Ponemah Mills, Taftville, Conn.

Dr. Harold De W. Smith, of A. M. Tenney Associates, presented a paper on "Recent Developments in the Surface Properties of Cellulose Fibers" at a meeting in Washington, D. C., March 28, under the auspices of the Cellulose Division of the American Chemical Society.

Josef Pollack, of Max Pollack & Co., Inc., New York, has been elected president of the Cotton Thread Association, New York, for the thirteenth consecutive time.

Rex R. Reeder, Jr., Richard Browne and **Frazie MacIver** have been elected additional directors of the Phoenix Hosiery Co., Milwaukee, Wis.

Adolph J. Winkler, consulting textile specialist, New York, was re-elected president of the New York Chapter of the Lowell (Mass.) Textile Institute Alumni at a recent meeting. **Louis J. Dogin,** American Aniline Products Co., became vice-president; and **C. Clifford Jessop,** secretary-treasurer.

Frank Williams has been appointed agent of the West Point Mfg. Co., West Point, Ga. For the last seven years Mr. Williams has been in charge of the company's towel plant at Fairfax.

S. B. Laws, former superintendent of the Gray plant of Textiles, Inc., Gastonia, N. C., is now general superintendent of the Green River Mills, Inc., Tuxedo, N. C., and the Pisgah Mills, Inc., at Brevard, N. C., succeeding **J. O. Williams.**

R. J. Woods has accepted the superintendency of the Gray Mfg. Co., a plant of Textiles, Inc., Gastonia, N. C., succeeding **Sherman B. Laws.**

M. B. Mullis, former superintendent of the Nebel Knitting Mills, Charlotte, N. C., is now sales representative in the Carolinas, Virginia and Tennessee for the Arkansas Co., of New York, manufacturers of textile chemicals, with headquarters in Charlotte.

J. D. Hothersall, superintendent of the Dilling Silk Mills, Kings Mountain, N. C., has resigned.

R. H. Dallas, formerly with the Atlas Underwear Co., is now superintendent of the Textile Parts Co., Gastonia, N. C.

Walter L. Sprye has resigned as superintendent of the Hillcrest Silk Mills, High Point, N. C.

R. A. C. Scott, formerly of the American Woolen Co. and more recently with the Glenerry Woolen Co., is now stylist with Gemson-Morse Co., Inc., woolen and worsted selling agents, New York.

C. B. Wall, formerly of Social Circle, Ga., has accepted superintendency of the Aponaug Mfg. Co., West Point, Miss.

W. W. Glenn, president, Glenn Mfg. Co., Lincolnton, N. C., has been appointed general manager of the estate of Daniel E. Rhyne, consisting largely of cotton mill properties.

Frederick H. Bishop, vice-president of Universal Winding Co., Boston, celebrated his 84th birthday at his home in Wollaston on March 30.

Walter L. Sprye has resigned as superintendent of Hillcrest Silk Mills, High Point, N. C.

M. H. Hayes resigned as superintendent of the Howell Mfg. Co., Cherryville, N. C., April 1, to accept a similar position with the Lenoir (N. C.) Cotton Mill.

Arthur Lyons, with the Lawton Mills, Plainfield, Conn., for several years, has joined the Ashland Mills, Jewett City.

W. C. T. Lewis has resigned as treasurer of the Westport Mfg. Co., Westport Factory, Mass.

George W. Calvert has become general manager of the Edgar Silk Mills, New Bedford, Mass.

W. J. Still, formerly superintendent of the Chester, S. C., plant of the Aragon-Baldwin Cotton Mills, Inc., is now superintendent of the American Spinning Co., Greenville, S. C.

Albert J. Malley, Sr., has been made superintendent of the finishing department at Arlington Mills, Lawrence, Mass.

R. N. Vincent has become superintendent of the New Hampshire Mills, Manchester, N. H.

Joe Jennings, formerly assistant superintendent of the Fairfax plant of West Point (Ga.) Mfg. Co., is now superintendent.

R. J. Woods has become superintendent of the Gray Mfg. Co., Gastonia, N. C.

A. D. Elliott, formerly of Fayette, Ala., is now superintendent of the Trion, Ga., Co.

W. R. Rogers is now superintendent of the designing department of the Roanoke Mills Co., Roanoke Rapids, N. C., succeeding **D. A. Purcell,** who resigned to become assistant superintendent of Aiken Mills, Bath, S. C.

S. L. McCracken, formerly superintendent of the Hart and Mountain Mills, Tarboro, N. C., is now on his farm near Rockingham, N. C.

Richard W. Rawlinson, research engineer at Suffolk Mills, Nashua Mfg. Co., Lowell, Mass., and former member of *Textile World* editorial staff is engaged to Miss **Elizabeth Paulina White,** daughter of **Royal P. White,** agent of Stirling Mills and president of Brown Hosiery Co. Mr. Rawlinson is the son of **William W. Rawlinson** and grandson of **M. A. Rawlinson,** both prominent New England textile men.

W. Speight Adams has resigned as superintendent of the dyeing department of the Beacon Mfg. Co., Swannanoa, N. C. He has been succeeded by Mr. Cleveland, who has been in charge of

the dyeing division of the New Bedford, Mass., plant.

R. B. Betts has been made chief engineer for the Columbus Mfg. Co., and the Eagle & Phenix Mills, all of Columbus, Ga.

Henry Robinson has accepted the position of assistant superintendent and overseer of the carding department of the Columbus (Ga.) Mfg. Co.

William Koehler, who has been worsted spinning mill superintendent for Forstmann Woolen Co., Passaic, N. J., is no longer connected with that company as the work of re-organization in the plant has been completed.

Otto Schopp has resigned as overseer of finishing at the Washington Mill, American Woolen Co., Lawrence, Mass.

D. A. Purcell has resigned as designer for the Roanoke Mills Co., Roanoke Rapids N,. C., to become assistant superintendent of the Aiken Mills, Bath, S. C.

Lawrence W. Philbrook is in charge of the rayon winding quilling and warping at the Moore Fabric Co.. Pawtucket. R. I.

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Obituary

L. L. Jenkins, aged 69, formerly president of several spinning mills in Gastonia, N. C., including the Flint Mfg. Co., Gray Mfg. Co., and the Arlington Cotton Mills, died suddenly in Asheville, N. C., March 28.

Samuel T. Hubbard, aged 78, dean of the New York Cotton Exchange and its president from 1900 to 1902, died last month in Yonkers, N. Y.

Claude Ramseur, aged 57, president of the River Waste Mills, Greenville, S. C., died there in early March.

Lawrence K. Vezin, aged 54, president of L. K. Vezin & Co., hosiery selling agents, and a leading figure in hosiery distribution for many years, died March 10, at his home in Elizabeth, N. J., following a long illness. His 37 years in the industry comprised services with the Hinchman, Vezin & Co. from formation in 1895 to liquidation in 1930.

Eugene Muller, aged 42, head of the cotton yarn firm of L. P. Muller & Co., Philadelphia, died March 31 of pneumonia, at his home, Merion, Pa.

Philip M. Tucker, aged 56, investment dealer of Boston, specializing in textiles, died April 1.

Thomas W. Buck, aged 69, founder in 1893 of Thomas W. Buck Hosiery Co., Philadelphia, and a former director of the National Association of Hosiery & Underwear Manufacturers, died March 17 in Philadelphia.

Wilson W. Burson, aged 68, director and one of the organizers of the B-Z-B Knitting Co., Rockford, Ill., died early in March in San Diego, Cal. He was a son of the late W. W. Burson, founder of the Burson Knitting Co.

George W. Kuchler, aged 69, for 40 years in charge of peroxygen sales of the Roessler & Hasslacher Chemical Co., now the R. & H. Chemicals Department, of E. I. du Pont de Nemours & Co., died recently at Houston, Texas.

A. C. Rau Becomes Secretary-Treasurer of Textile Exhibitors Assn.

Directors of the Textile Exhibitors' Association, Inc., met on Wednesday, March 8, at the office of the association in Boston, called together by the president, E. F. Hathaway of Shawmut Engineering Co. of Boston. Besides Mr. Hathaway, those present were: F. H. Bishop of Universal Winding Co.; W. I. Stimpson of the Draper Corp.; Lewis E. Tracy of Lewis E. Tracy Co.; C. E. Chase of General Electric Co., and S. F. Rockwell of Davis & Furber Machine Co.

The directors expressed sincere regret on the death of Chester I. Campbell, who had been secretary-treasurer of the Textile Exhibitors' Association since its incorporation in 1913. Albert C. Rau, assistant to Mr. Campbell and associated with him since 1907, was elected by the board to fill the vacancy caused by Mr. Campbell's death. Mr. Rau is general manager of the Chester I. Campbell Organization, manager of the Knitting Arts Exhibition, New England Sportsmen's and Motor Boat Show, Boston Poultry Show and the Home Beautiful Exposition.

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Committee D-13 Meets

The postponed meeting of Committee D-13 of the A.S.T.M. was held at the Hotel New Yorker, New York, April 6 and 7. The program was about as previously announced and will be detailed in our next issue. Dr. P. G. Agnew, Secretary of the American Standards Association, spoke at the banquet, April 6. Dr. Webb also spoke on cotton fiber quality. At Friday's session O. A. Belger spoke on modern testing methods and Prof. G. B. Haven on determination of yarn strength.

Textile Calendar

Southern Textile Association, Master Mechanics' Division, Spring Meeting, Chamber of Commerce, Charlotte, N. C., April 21, 1933.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, Apr. 24 to 28, 1933.

American Cotton Manufacturers Association, Thirty-Seventh Annual Convention, The Carolina, Pinehurst, N. C., April 27-29, 1933.

North Carolina State College, Annual Textile Exposition and Style Show, Textile Building, Raleigh, N. C., April 27, 1933.

Southern Textile Association, Eastern Carolina Division, Spring Meeting, N. C. State College, Raleigh, N. C., April 27, 1933.

National Cotton Week, May 15 to 20, 1933.

American Society for Testing Materials, annual meeting, Stevens Hotel, Chicago, June 26 to 30, 1933.

Carolina Yarn Association, Annual Golf Tournament and Outing, Roaring Gap, N. C., Sept. 16 and 17, 1933.

Fourteenth Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 4 to 9, 1933.

Southern Textile Exposition, Eleventh Annual Exhibit, Textile Hall, Greenville, S. C., Oct. 15 to 20, 1934.

Anti-Run Circular Hose

(Continued from page 57)

develop a run when worn, even when subjected to more than the ordinary ambulations of a housewife going about her regular duties. In fact, it takes an experienced knitting man to tease a run in some cases, and certainly the average buyer is unable to do so. Hence, to all intents and purposes, such stockings are run-proof. Are they not therefore entitled to be called at least "non-run"? Liberalizing the definition increases the opportunity, and hence the temptation, of the unscrupulous or careless manufacturer to overstep the borderline. It would seem wise, therefore, to term all anti-run circular stockings, except in very extreme cases, no more than "run-resist."

The circular-hosiery manufacturers believe that they have a better opportunity than the full-fashioned men to win acceptance of their anti-run product, barring the usual difficulties encountered by the former group in acting independently of the latter. In the first place, they feel that they can make an anti-run stocking which more closely resembles the plain or staple product, and they can do this in a simple manner on their regular spiral machines, as illustrated in Fig. 1. This method produces the stitch shown in Figs. 2 and 3, which, when not magnified, shows no distinctive pattern, as will be noted in Fig. 4. At least one mill has developed individual changes in its machines to produce this stitch, including a new needle shape which improves the accuracy of the short float, but good results are obtained on standard machines. Although such a stocking is non-run in only a downward direction, it is run-resist in an upward direction, and hence is superior in wear to the staple article.

Now it happens that the further one departs from a staple appearance, the more opportunity one has to make stockings which are resistant to running. An example of this is shown in Figs. 5 and 6, which illustrate a stocking of definite pattern, but with remarkably good run-resistance. Even wearers of this stocking find it run-proof as far as they are concerned, and it is still enjoying a sale. Another example of a stocking which has good run-resisting ability is illustrated in Figs. 7 and 8. Patents on both have been applied for.

Another special condition favorable to the circular type is the fact that in the low price bracket, which it is necessary for such hosiery to reach, an extensive use of rayon is required. Since rayon is weaker than silk, stockings made from it are more susceptible to holes and runs, although they are to some extent less susceptible to snagging. Hence there is greater need for a run-resist property. Other comparative advantages reside in the lower retail price of all circular stockings and the fact that at least a simple 1x1 float does not necessarily raise the price over 10 or 15c per pair.

It appears that if (and it is an important "if") the circular-hosiery manufacturers will have the courage to act independently of their full-fashioned brethren to the extent of thoroughly and effectively educating the consumer to the advantages of anti-run hosiery and to the unimportance of the wale line and the familiar close-stitch appearance, they can establish run-resist hosiery on a stable footing.

LINEN-LIKE EFFECTS NEWEST FEATURE OF

Paris Openings

By Marie H. Stark

◆ *Miss Stark is a stylist of long experience in all styled textiles. She returned last month after attending the Paris openings. In this article she describes the new lines and presents an experienced analysis of their significance. The samples illustrated were selected by Miss Stark especially for their interest to readers of* TEXTILE WORLD.

THIS is a season in which relationship between the various kinds of fabrics is most obvious—silks, cottons, wools and even knitted materials show many similar tendencies, and look so much alike in many cases that it takes an expert to distinguish between them even at close range.

Speaking from the standpoint of Paris, especially as represented by the spring openings of the great dressmaking houses, the outstanding new note is the importance given to linens of a new non-crushable type. Linen, crash and etamine weaves are well represented among the woven woolens of the season, and knitted fabrics often follow the same tendency toward open, rustic effects. Silks and synthetic fabrics in basket weaves, canvas and cheviot effects are the latest development in their particular field.

Woven Wools

We shall begin with the wool materials. For coatings and sports wear, fabrics with little hairs upon the surface (rabbit hairs and those of other genre) are much to the fore. Rodier is one of the great sponsors of this kind of fabric and two examples of his new coating are shown in connection with this article. Sample No. 1 is typical of what Vionnet and other important houses are using. It is a rather loose irregular weave in a brownish putty tone and all over the surface are little white hairs pointing this way and that. Beige, putty and natural linen tonalities are outstanding in all fabrics.

No. 2 is another Rodier fabric which we show for several reasons; first because of the short white hairs which form a vague over-plaid on its surface, and second because of the check. Checks and plaids, ranging from strong color contrasts to the so-called "invisible" effects, run through every type of material—a characteristic note of the season. Every shop window in Paris is filled with them, all the great couturiers feature them, and the smart restaurants are gay with the bright plaid sleeves and collars, scarfs and gloves—yes, gloves!—of their feminine guests.

The black and white check No. 3 is from Chanel, and in connection with it we wish to call attention to the fact that black-and-white and blue-and-

white combinations are much in vogue. The Meyer fabric No. 4 further emphasizes the tendency toward irregular open weaves. It is one of the new woven "twine" effects.

The brightly striped sports woolen No. 5, the exquisitely soft, sheer texture No. 6 with zig-zag pattern woven in it, and the characteristic nubbed etamine No. 7, all from Rodier, belong to the category of irregular, open weaves.

The Chanel fabrics, Nos. 8 and 9, are typical of what one finds at all the great dressmaking houses —patterned woolens used for coats, ensembles and dresses, according to their weight. No. 9 with an invisible stripe in its weave is particularly attractive and is shown in Chanel's deep, rich yellowish red, a good color this season.

Three more patterned wools, all from Chanel, are illustrated, Nos. 10, 11 and 12. The first is a sports fabric in pale pink, with a block effect in the weave. Nos. 11 and 12 are light-weight fabrics closely resembling two designs from the spring silks launched by this house. The first looks like one of Chanel's Schiffli embroidered chiffons; the second is the exact reproduction of one of the chevrons she shows in a new heavy sheer. It is interesting to note that Chanel very frequently repeats a weave or print in various materials.

Knitted Fabrics

Knitted fabrics were much in evidence at the spring openings in Paris. Many of them had a loose, open appearance, and a chic hand-knit look. Ribbed effects are also extremely smart. Bruyère does particularly attractive things with a knit fabric in which the self-colored rib is as pronounced as a corduroy. Molyneux uses checks and irregular fabrics which look as though they had been knitted of twine in some of his best-looking sports costumes.

Vera Borea features checks, and much attention was attracted by her swim suit in a bold shepherd check with skipping rope belt. This house puts knitted yokes in sports frocks—"for comfort," they tell one, but we might add for chic as well. She also shows dark knitted sweaters and berets with white linen plus fours for sports. Chanel's attractive printed jerseys have already been referred to, and Schiaparelli shows a new Jerseyritz, which is a satiny silk jersey with a self stripe.

One of the most interesting knitted fabrics of the season is the woven plaid silk jersey No. 13 used by Vionnet. The plaid is formed by diagonally crossed bars of strong black and red and shadowed black and red on a white ground. It is used in a sports model with an over-dress of plain black wool.

No. 14 is a very new fabric from Tissus Chanel. The ground is a sheer tissue knitted of the finest flax with a spaced openwork line in it. The flax is natural color, very soft and silky, and there are groups of bright red wool cross stripes in it. Chanel has launched flax this season, using it in many ways, always in natural color. For instance, some of her evening gowns are made of a sheer woven flax fabric which looks like pineapple cloth and has little embroidered designs in silk.

All the rest of the jerseys illustrated are from Rodier, and are outstandingly smart. No. 15 has

a white ground with a beige cross stripe and a warm brown diagonal. No. 16 has a bright red ground with a fine diagonal over-plaid in black and white. No. 17 also has a red ground with medium-size and small white spots in it. No. 18 has alternating blocks of white and bright blue . . . with a raised white spot in the middle of the blue block and a raised blue spot in the middle of the white block. No. 19 has a loosely woven white ground with thick fuzzy cross stripes of alternating navy and delft blue. No. 20 has a flecked white and blue ground with a raised pattern of broken zig-zags in the white and blue.

Linens and Cottons

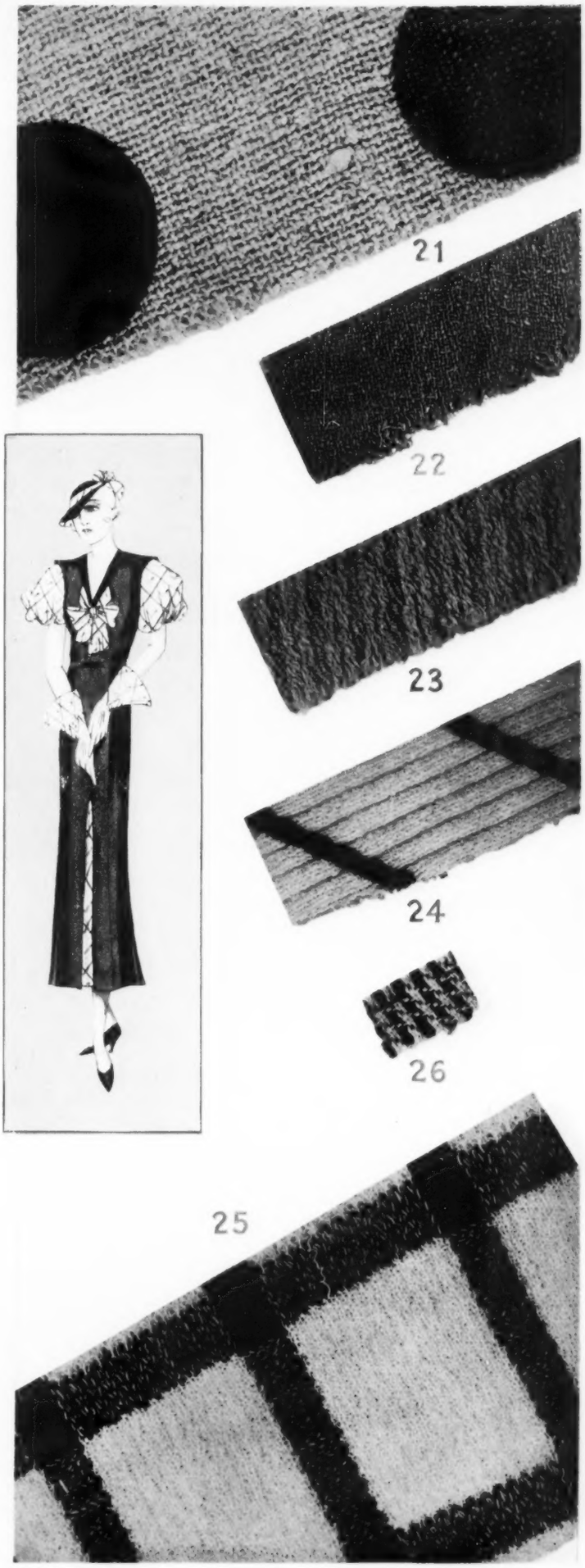
As stated at the beginning of this article, the sensational fabric development of the spring opening in Paris was the launching of linens as a high style fabric. The new linens, many of which are made by Rodier, are quite different from anything which we have had before. They are much less prone to mussing, formerly the great drawback possessed by this fabric. Many of them look like wool, and frequently they were used like wool. Molyneux, in a conservative and practical way, employs these new linens to great advantage. He trims dark wool street dresses with them, makes hats of them and the smartest kind of slip-on gloves. He puts a linen swagger coat over a navy blue wool street frock and makes entire ensembles of this attractive fabric. Linen is most frequently used in its natural color, and while various different weaves were employed, that which is the ground of the Rodier print, No. 21, is probably most in evidence. This is a crash or sacking weave. The fabric is astonishingly soft and falls beautifully. The ground is in natural tone with spots about the size of a silver dollar. A lighter, more crepey linen weave is No. 22.

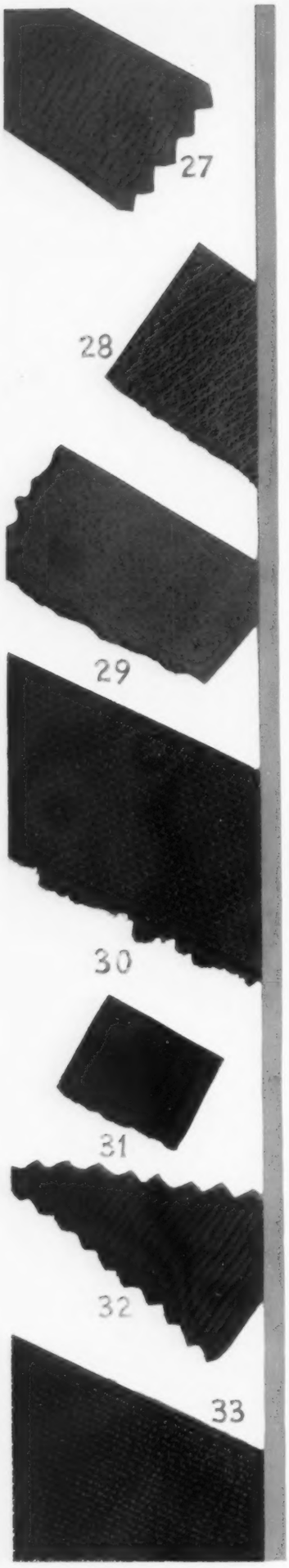
A great many of the couturiers used the coarse diagonal cotton No. 23, or a similar fabric, for beach and general sports clothes. Lucile Paray makes most attractive dresses, skirts and short jackets of it in white. These little ensembles have bright blouses of various fabrics which show beneath the coats, and which when revealed prove to have sun tan backs—that is, no backs at all.

Plaid and striped cottons, such as Nos. 24 and 25, are typical of the season, and the tiny sample of a minute woven check, No. 26, shows the material of Goupy's sensational little evening frocks which have set all Paris talking. The frocks are in gingham colorings. All sorts of etamine weaves are good in cotton, and wooly looking cottons of all kinds are well regarded. Piques are much used. Mainbocher, for instance, makes the smartest of white pique peplum jackets to go with black silk evening gowns. Nor are the finer and sheerer types of cottons neglected. Muslin blouses, sometimes in dark colors, are worn with suits, and one of the most attractive gowns in Molyneux's collection is of white dotted swiss much beruffled at the bottom. Organdie is omnipresent.

Silks

As regards texture of silks and synthetic fabrics, the great question is "Are they going





flat?" The answer—"They are certainly going flatter, but they have not yet become flat." Throughout all of our hysteria in America over crinkled and cloky weaves, Paris went right on making a certain number of models in classic silks, and she is making more of them now. She regards these fabrics as staples and is still much interested in novelty weaves. This does not mean that she is keeping to the crinkles of matelassés. That would be to discount her ingenuity. She is still using a few cloky weaves—for example, peau d'elephant, No. 27, an irregular slightly raised cloky, is used by many houses, and Chanel's new chiffon matelassés are very successful. The openings brought forth a whole series of materials which are neither rough, strictly speaking, nor classically flat. These are fabrics of the type of Nos. 28 and 29, soft, fairly thick fabrics, but not heavy sheers. They look and feel like wool, and are used for day, evening and sports costumes. These include, in addition to the two types shown, basket and canvas weaves, related in appearance to the new linens. No. 30 shows a typical silk canvas.

Ribbed silks are important and it is rumored that America is hard at work on the creation of new ideas along this line for fall. Ribbed silks in the spring collections include No. 31, the new Patou crepe, and No. 32, Molyneux's version of the same type. Heavier ribs, such as ottoman, were to be seen, and Riqueur's crepe with the raised velvet rib was one of the great successes. Twills are also good; foulard is considerably used and much discussed. Vionnet uses beautiful foulard plaids for trimming many of her gowns.

Crepe Destinée, No. 33, was used by Lanvin. A smart crepe with a raised plaid from Godde Bedin is No. 34. No. 35 shows one of Chanel's new heavy sheers, most of which are based on a variation of the chevron, as are her clokys and many of her wools. Heavy sheer fabrics continue strong with this house.

As for prints, every big house showed them and every type was in evidence. Of these, the newest are the ciré chiffons with polished or "lacquer" surface. Lanvin used beautiful examples of this kind of print, usually with large flower patterns, in her evening gowns. A chic ciré chiffon from Mainbocher is No. 36. This has a scratch pattern in brick red on a white ground. Molyneux's large flower prints on chiffon and crepe and sometimes crepon were outstanding, and Chanel's discreet little spaced prints on crepe, chiffon and shantung (her special shantung), were smart.

We must not neglect to mention the great importance of satins, which will undoubtedly react on fall styles in this country, nor to comment upon the many lacquered fabrics which were used.

Truly sheer fabrics, such as chiffon, silk organdie and organza, are much in the mode. And not a little silk net is used. Novelty sheers are an innovation. Schiaparelli launched two very attractive examples. One of them is a blistered fabric, effective both in white and colors. The other is a Riqueur material which he calls a double chiffon. It is, as a matter of fact, a chiffon matelassé with a cross weave, delicate and diaphanous in effect, but surprisingly firm to handle and undoubtedly a fabric with a future.

ADVERTISING PAGES REMOVED

Textile World Analyst

SOME IMPROVEMENT NOTED IN MANUFACTURING MARGINS

THERE are two encouraging items in the statistical news this month. The first is that textile mill operations during at least the first two months of the year were at a slightly higher rate than that for the corresponding period of last year; the second, and more important, is that manufacturing margins strengthened slightly in March in one section of the market, at any rate.

After recording on this page, throughout 1932, a decrease in mill activity as compared with the previous year, it is a relief to note that the total quantity of all raw materials consumed in January and February was 2½% in excess of the consumption during the same months last year. While we know that textile progress cannot be measured by volume of goods made, a well maintained rate of production at least reflects a good employment picture. Furthermore, it is a safe bet that there is no marked inclination nowadays to manufacture for stock—and that, roughly, production represents sales.

Just what the dramatic month of March did to the picture is a little too much for the prophetic powers of this observer—and statistics are not yet available. Undoubtedly there was some shrinkage in the volume of goods produced—but we believe that the total for the first quarter will show up fairly well against first quarter of 1932.

For those who are still interested in the past, it should be recorded that mill activity during the first two months of 1933 was about 17½% below the average activity for those same months during the 1924-1931 period.

Operations have been by no means uniform throughout the industry. Cotton consumption in January and February was slightly higher than last year; wool consumption was slightly lower; and silk consumption was sharply off. The latter statement must be qualified however, since "deliveries" are not necessarily consumption. The unexpectedly high rate of such deliveries in January was more than leveled off by a very low rate in February; the actual consumption was somewhere in between these two figures. In rayon, the estimate of 35,000,000 lb. production for the first quarter of the year, referred to elsewhere in this issue, means that if this rate should be maintained throughout the year, the total would be about 7% in excess of 1932. However, curtailment is now in process—and further speculation in this direction would be futile.

Page of Quotations

In response to requests from many readers that we expand our quotations on raw materials, yarns and fabrics, we are now devoting a page to this material. See page 108.

Turning to manufacturing margins, Tables I and II show the performance in two important groups: carded cotton fabrics and yarns. Rate of improvement was not particularly impressive but any stiffening is something to talk about.

It will be noted that the average margin in carded fabrics in March was 10.2c. against 10.1c. in February. Absence of official cotton quotations during the first two weeks of last month made it necessary to confine the March estimates to the last fortnight of the month. The fact that there was a decline in the margin in the last week of March takes the edge off any rejoicing in this particular section.

In yarns, however, a most unusual development occurred. Despite a slightly lower raw cotton market on March 29, as against the previous week, average manufacturing margin on carded yarns advanced from 9.5c. to 10c. In view of the fact that this has been one of the weakest spots in the market, and that the February margin was sharply off from January, the improvement in March reflects a return to sanity on the part of spinners.

Taken all in all, there is enough cheer in the statistics to indicate that textile manufacturers are sharing in the improved feeling noted in business generally.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents
July, 1931	15.3
October, 1931	13.3
January, 1932	12.1
June, 1932	9.5
July, 1932	9.1
August, 1932	11.1
September, 1932	13.0
October, 1932	12.6
November, 1932	10.7
December, 1932	10.6
January, 1933	10.4
February, 1933	10.1
March, 1933	10.2
Wk. end. Mar. 22	10.5
Wk. end. Mar. 29	9.9

TABLE II. CARDED YARN MARGINS

Date	Margin in cents
July, 1931	12.6
October, 1931	12.7
January, 1932	10.9
June, 1932	9.9
July, 1932	9.6
August, 1932	9.7
September, 1932	12.8
October, 1932	12.3
November, 1932	11.3
December, 1932	10.9
January, 1933	10.2
February, 1933	9.4
March, 1933	9.8
Wk. end. Mar. 22	9.5
Wk. end. Mar. 29	10.0

Textile World's Index Numbers

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
July 31, 1914	100	100	100	100	100	100	100	100	100
1925	187	188	189	176	223	229	224	233	143
1926	140	155	157	149	184	189	179	207	136
1927	140	153	159	153	181	184	187	195	119
1928	160	162	162	166	199	202	199	197	110
1929	153	144	145	167	176	179	192	211	108
1930	108	125	123	144	127	139	161	202	179
1931	68	93	92	119	99	112	134	161	54
1932									
Jan.	53	78	74	102	94	104	127	147	41
July	47	68	62	96	59	72	101	116	25
Oct.	52	83	78	107	82	97	115	130	37
Dec.	48	74	69	103	77	87	108	125	33
Jan. 1933	50	72	67	100	76	85	105	125	29
Feb. 1933	48	68	65	95	75	83	102	125	26
Mar. 1933	49	70	66	96	75	84	102	125	26

TEXTILE WORLD'S

Cotton Digest

THE third annual National Cotton Week will be observed May 15th-20th. This "Week" enjoys the reputation built up by the two successful events in 1931 and 1932. It also seems to enjoy a particularly good psychological opportunity this year. George Sloan, president of the Cotton-Textile Institute, points out that there are present signs of rising market values; that style prestige of cotton in women's apparel is at a new peak; and that an increasingly large number of men will be turning to cotton suits this summer. Certainly, anyone who visited the "Cottons of the Day" exhibit staged recently by the Fashion Group, could not fail to be impressed with the continued progress in styling of cotton goods and in diversification of their uses.

National Cotton Week benefits *all* branches of the cotton trade from producer to retailer; consequently it deserves support from every division. Given that support, there is no reason why the event should not be, as Mr. Sloan forecasts, a contribution to general industrial revival.

A. C. M. A. Convention

Professor A. S. Dewing, of Harvard University, an outstanding authority on finance, will be one of the principal speakers at the thirty-seventh annual convention of the American Cotton Manufacturers Association, which will be held at The Carolina, Pinehurst, N. C., April 28 and 29.

The program will begin Friday morning at 10 o'clock when President B. B. Gossett will announce the committee on nominations, after which his annual address will be delivered. W. D. Anderson, Sr., of Macon, Ga., head of the Print Cloth Group of Cotton Manufacturers, will discuss some of the outstanding industrial problems outside of the industry. The other important address of the session will be delivered by Prof. Dewing.

There will be no formal afternoon session Friday. Carded yarn manufacturers, however, are expected to hold a group meeting under the leadership of Capt. A. M. Fairley, of Laurinburg, N. C. Other members and their guests will engage in golf and other forms of recreation available at Pinehurst. Guest speaker at the banquet Friday evening will be Senator Josiah W. Bailey, of North Carolina. The convention will be concluded by the regular executive business session Saturday morning at 10 o'clock, including committee reports and election of officers.

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Cotton Week Plans

National Cotton Week, May 15-20, promises to aid in the stimulation of general industrial activity. George A. Sloan, president of The Cotton-Textile Institute, has enumerated several factors that make for an intensified selling drive on cottons during the week: signs of rising market values, fashion authorities declare style prestige of cottons now at a new peak, indications of increased purchases of cotton suits for men, and the enthusiastic response to promotional suggestions sent out by the Institute. Colorful display posters carrying the slogan—"Everybody Uses Cotton" — are being furnished to merchants.

The Durene Association of America, according to E. L. Starr, director-treasurer, is supplying retail stores with merchandising suggestions for National Cotton Week. Immediately following this event, the Durene organization plans early emphasis on knitted and woven mixtures of Durene and wool for fall.

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Carded Yarn Group Discusses Statistics

Statistics of the carded sales yarn group were considered at a meeting of mill executives representing approximately 1,600,000 spindles, held in Charlotte, N. C., March 24 and 25. Stocks of carded yarn were about the same as a year ago, but were less than in 1930 and 1931. Aggregate unfilled orders on hand, after deduction of stock, were equal to about seven weeks of production at the current rate. Carded yarn mills were reported operating at less than 50% normal capacity.

Capt. A. M. Fairley, vice-president and general manager, Waverly Mills, Inc., Laurinburg, N. C., was appointed chairman of the carded yarn group of The Cotton-Textile Institute, Inc., to succeed B. B. Gossett, who has served in that capacity since the group was organized. The meeting was addressed by George A. Sloan, president, and Sydney P. Munroe, vice-president, of the Cotton-Textile Institute; Fred Rakestraw, president of the Cotton Yarn Merchants' Association, of Philadelphia; and Capt. Fairley. Committees were appointed including one to confer with yarn merchants with view to improve market conditions.

•

S. T. A. Annual Meeting, May 26 and 27

Southern Textile Association, at its annual meeting this spring, will commemorate its founding 25 years ago. The gathering will take place in Charlotte, N. C., on Friday and Saturday, May 26 and 27.

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Fashion Group Show Displays New Uses

The constantly growing market for cotton goods in the apparel and decorative field was strikingly demonstrated at an exhibition, called "Cottons of the Day" which was held by the Fashion Group, in its New York headquarters, the last week of March and the first half of April. The collection of cottons shown covered a wide range of under and outer apparel, and represented the products of more than 50 American firms. Dress fabrics, household materials, luggage, carpeting and rugs, upholsteries are only a few of the divisions included. The umbrella display was especially interesting. Cotton furs were another novelty.

The setting for the show was prepared by members of the Fashion Group, including Miss Virginia Hamill and Miss Hortense Case; Miss Rose Grimes designed a booklet on the exhibit. Miss Catherine Cleveland of the Cotton Textile Institute was chairman of the exhibit committee.

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Georgia Meeting May 18-19

Cotton Manufacturers Association of Georgia will hold its annual meeting at Sea Island Beach, Ga., on Saturday and Sunday May 18 and 19.

•

Eastern Carolina Division Meets Apr. 27

The Eastern Carolina Division of the Southern Textile Association will hold its spring meeting at N. C. State College, Raleigh, N. C., April 27. The first session, devoted to spinning problems, will be led by D. F. Lanier, of Oxford, N. C., while the afternoon discussion on carding will be conducted by M. R. Vick, of Roanoke Rapids, N. C.

Carolina Yarn Ass'n.

Howard Cannon, of Duplan Silk Corp., Charlotte, N. C., was elected president of the Carolina Yarn Association, at a meeting in Greensboro, N. C., March 27, succeeding C. C. Harding. Joseph R. Morton, of Tubize Chatillon Corp., of Greensboro, was re-elected treasurer. Bruce Griffin, of Charlotte, was chosen vice-president, and Frank Wallace, of Statesville, N. C., secretary.

•

Textiles-Incorporated Reports 1932 Loss

Textiles - Incorporated, Gastonia, N. C., which was formed by a merger of combed yarn mills about two years ago, reported an operating loss of $231,090 for the year ended Dec. 31, 1932, before interest on bonds and loans, or provisions for depreciation and other provisions for losses. The deficit of $977,022 at the beginning of the year was increased to $1,827,536 during 1932. In his report at the annual stockholders meeting, A. G. Myers, president, said:

"Throughout the year the textile industry, along with other industries, has suffered in that normal operations were not possible. Our plants were able to operate only approximately 46% of a normal 55-hour daylight schedules. Taking into consideration that our plants were built for day and night operations, this means for us 23% of normal. Under this restricted schedule of operations we produced approximately 6,000,000 lb. of yarn.

"Under such a reduced schedule of operations, it was impossible to make money, but on the other hand loss was inevitable. During the year further reductions of salaries throughout all departments were put into effect, resulting in a further annual saving of approximately $8,000."

Observers believe that the mills would have suffered greater proportionate loss if they had been operating as individual concerns.

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Twistless Yarn

The production of twistless cotton yarn on a commercial scale is, our Belfast correspondent assures us, being conducted in Lancashire, England. The fibers are merely drawn out parallel and temporarily stuck together with an adhesive, such as rubber or size. After the untwisted yarn has been woven or knitted, the adhesive is removed, resulting in a lustrous, soft, low-priced fabric having superior draping qualities and the appearance of silk. Although quantity production has thus far been confined to woven cotton fabrics with twisted warp and untwisted filling, experiments are being conducted with untwisted warp as well, and with worsted, staple silk, and other fibers. The interlocking of the woven yarns is said to be sufficient to provide reasonable fabric durability. Inventor is W. R. Allen, of Radcliffe, near Bury, England. His invention is covered by British patent 361,037.

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Financial Statements

Kendall Co., Boston, reports net profit for 1932 of $60,518 against net profit for 1931 of $203,913. Sales for 1932 totaled $12,897,145.

Ludlow (Mass.) **Mfg. Associates** reports net loss for 1932 of $400,632 as compared with net profit of $96,694 for 1931. Sales declined 22% in units and 39% in value in 1932 from 1931.

Consolidated Textile Corp. and **Consolidated Selling Co., Inc.,** report for 1932 a net loss of $1,233,639 after depreciation, interest accrued, but unpaid, on bonds and notes. For 1931 the company reported a loss of $540,027 after taxes and depreciation and a net loss of $3,282,862 after unpaid interest and extraordinary charges.

Cannon Mills Co. and subsidiary for 1932 report net income of $477,970 after depreciation and other charges, equivalent to 48c. a share on common stock. This compares with net income of $2,088,917, or $2.09 a share in 1931. Net sales aggregated $16,355,287 in 1932, compared with $21,174,346 in 1931.

Manville-Jenckes, Pawtucket, R. I., is operating at a loss, Zenas W. Bliss and George R. Urquhart, receivers for the company, stated on March 16, in their second report filed in Providence County Superior Court. The net operating loss for the last quarter of 1932, amounted to $13,754.38 before depreciation and extraordinary charges and to $99,139.03 after extraordinary charges but before depreciation.

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Cotton Mill News

Lees-Moodus Mills, Inc., has been formed in East Haddam, Conn., to manufacture all kinds of cotton cordage, cotton goods, etc.

Arthur Smith, Inc., Middletown, Conn., is a new corporation formed to manufacture lace, cloths, etc. Space has been leased in the old **Burns Lace Co.** plant, Middletown.

Fulton Bag & Cotton Mills, Atlanta, Ga., has awarded contract to A. K. Adams Co. for repairs to its buildings. S. C. Allen is engineer in charge.

Canton (Ga.) **Cotton Mills** No. 2 have completed changing over their picker system to one-process system, manufactured by Precision Gear Co., Charlotte, N. C. No. 1 plant had a similar change made last summer.

Mary Leila Cotton Mill, Greensboro, Ga., is installing four additional 208-spindle Whitin spinning frames and 24 Draper Model E looms.

Georgia-Kincaid Mills, No. 2, Griffin, Ga., have remodeled the boiler room and installed McBurney stokers, Copes water regulators, and Fisher pump governors. The new equipment was furnished and installed by McBurney Stoker & Equipment Co., Atlanta, Ga.

Highland Mills, Griffin, Ga., have taken bids on general contract for a two-story and basement addition, to be used for storage and distributing department. It will cost about $18,000.

Poulan (Ga.) **Cotton Mills** suffered from fire of undetermined origin on March 11, which destroyed a warehouse and 500 bales of cotton with loss of $20,000.

Berkshire Fine Spinning Associates, Inc., will sell dwellings and unimproved land at various locations.

Northern Waste Mills, Lowell, Mass., have been sold to Charles Yerid of Lowell by Merchants National Bank of Boston.

Firestone Cotton Mills has sold its Newburyport, Mass., plant to W. E. O'Hara, treasurer of Textile Machinery & Supply Co., Fall River, Mass.

Nashua (N. H.) **Mfg. Co.** is installing 70 new looms in its Suffolk mills plant, Lowell, Mass.

Mount Holly (N. J.) **Textile Co.**—Henry Blatt, Burlington, N. J., has been appointed receiver.

Caswell Cotton Mills, Kinston, N. C. have been bought by J. W. Ferrell and associates for a reported price of $61,500, from F. C. Dunn, receiver. The purchasers will begin operations soon.

Cascade Mills, Inc., Mooresville, N. C., with property consisting of 45 acres, was sold at auction, March 30, to the liquidating committee of the Hunter Mfg. & Commission Co., for $100,000.

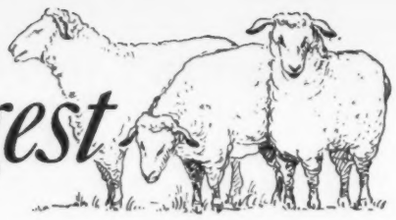
Blair Mills, Belton, S. C., have started construction of a $10,000 building addition, 80x128 ft., standard brick mill construction with steel sash, to provide more space for the sewing department.

Bobo Weaving Mills, Spartanburg, S. C., which plans to manufacture cotton, rayon and silk goods, has been incorporated with an authorized capital stock of $25,000. W. C. Bobo is president and treasurer and Wallace M. Bobo is secretary. The new mill will occupy the plant formerly owned by the Yarns Corp. of America.

Virginia Textile Mills, Inc., Emporia, Va., recently granted a charter, was organized to take over the property of the **Morrell Mills, Inc.,** organized in 1929.

TEXTILE WORLD'S

Wool Digest



THE committee on trade statistics, of the National Association of Wool Manufacturers, did a good job in its recommendations to the Bureau of the Census concerning monthly reports on wool consumption and machinery activity. These reports, since the first of the year, have not only represented considerable saving in Government expense but also have given the industry more nearly the information it needs, and in the form it needs it. The members of the committee, the headquarters staff of the association, and H. S. Davis of the University of Pennsylvania, merit congratulations.

Now, the industry at large can help. These statistics appear just about a month after the end of the period covered. It is our opinion that, if manufacturers would return the completed forms at once, this gap might be shortened. If so, the value of the statistics would be greatly enhanced. It is not too much to hope that some day the release date of this information will be the same as that now prevailing in cotton consumption data.

Hope for Firm Fall Goods Opening

The stage is set for a firmer opening of wool goods than has been seen for many seasons. In the first place the opening for fall is later than ever before, being expected about the middle of April. Buyers have less time to carry out bearish tactics. Raw wool has risen 7½ to 12½% since the first of the year and with little encouragement will remain firm. It is understood that the big company will continue its policy of encouraging better prices but the independents must follow if the situation is to be sound.

However some of the early price indications have been disappointing and weakness in several quarters has been regarded as a tactical blunder.

In men's wear the Glen Urquhart plaid has not come up to its early promise, partly because conservatism and preference for more staple goods has not yet been overcome. Perhaps with a more definite turn from the bottom of the depression will come more general interest in men's wear fancies.

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New Blanket Season Starts

The last week in March witnessed a concentrated opening of blankets for the 1933 season by makers of all wool, part-wool and all-cotton blankets. Much ingenuity has been expended in styling the new lines, but, although plaids are prominent in all lines, several of the big houses expect to do volume business in solid colors in the higher priced numbers. Labels show the influence of the new standards and the part-wools are expected to share largely in the business because their content will be less a mystery to consumers than hitherto. New lines labeled 25% wool may prove leaders.

Several houses have expanded lines of "sheet blankets" which promise well as a competitor with summer weights of regular blanket lines. Prices on wool and part-wool blankets are about the same as a year ago, while cotton blankets are lower.

Chatham Mfg. Co. is featuring 90 inch lengths. The line is complete in wools and part-wools with summer blankets stressed. Retail ranges from $3.95 to $4.95 are expected to be the popular ones.

Nashua Mfg. Co. offer cotton and part-wool blankets and a line of sheet blankets; also china cotton blankets. Later all-wools and Nashua's special line of silk and wool blankets will be offered.

Pepperell Mfg. Co. also has a complete line of cotton, sheet-blankets, part-wools and all-wools. Cotton blankets are at 28¼c. to 39¼c. for singles, sheet blankets at 41 to 55c., part-wools at $1.11 to $1.92 and all-wools at $1.77 to $4.35 for singles and $3.40 to $4.25 for pairs.

The labeling practice is now fully in effect and retailers with any of the old part-wool labeled blankets in stock are expected to market them as cotton blankets.

American Woolen Co. is showing a wide range of blankets featuring two-tone colorings. The line includes motor robes and camp blankets. The Leaksville line has been opened by Cannon Mills. New numbers have been added and homespun effects featured. Beacon Mfg. Co. and Carolina Cotton & Woolen Mills have also opened.

Wool Consumption Now Reported on Clean Basis

Wool consumption in the United States in February totaled 13,001,000 lb. (*clean* equivalent basis, excluding 3,559,000 lb. carpet wool in grease). This compares with 12,975,000 lb. for February 1932. The former method of reporting grease equivalent, which gave a higher figure, was discontinued in December. Of the February total (excluding carpet) only 466,000 lb. was foreign wool.

Activity of machinery as reported for February showed a slight gain over January. The most active class of machinery was automatic looms which ran 96.3% of maximum single shift. Worsted combs ran 86.5%. The report has been more detailed than in the past.

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Mohair Consumption About One-Fourth Current Supply

In the opinion of observers connected with the Dept. of Commerce stocks of mohair in all hands at the start of 1933 were about 35,000,000 lb. against 28,000,000 lb. the year before. In January 1932 most of the stock was owned by the National Wool Marketing Corp. which sold nearly all of it during the year, part for carpet purposes. Estimate of 1932 consumption is 8,000,000 lb. Imports were negligible. Stocks of kid hair have shown little accumulation. Texas goat flocks were reduced during 1932 and unfavorable feed conditions in the grazing area in 1933 would result in further reduction.

Mohair production in 1932, including kid hair, in six leading mohair States was 16,495,000 lb. compared to 19,071,000 lb. clipped in 1931, according to the estimate of the United States Department of Agriculture. This decline was due to a decrease of 7% in the number of goats clipped and in the average clip per goat.

The table below shows the mohair produced in each of the five States for 1930, 1931 and 1932:

State	Total Mohair 1930	1931	1932
	(Thousand pounds)		
Texas	14,800	16,400	14,000
New Mexico	815	933	1,000
Arizona	900	960	760
California	140	136	130
Oregon	480	472	460
Missouri	168	170	145
Total	17,303	19,071	16,495

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Worsted Yarns Steady

Worsted yarn business has been moderate but nevertheless prices stimulated by higher tops and wool have improved. Activity as between English and French system yarns is well balanced, English spindles running at 55.5% of capacity in February while French ran at 59%.

Tops Rose 3 to 4c. During March

Strengthening of the wool and top market during March is well exemplified in quotations in wool top futures. On March 16 when the exchange opened after the banking holiday prices gained more than 5c. per lb. over closing prices of March 3. They closed on March 31 about 2c. under this high point for the month but still were 3c. over early March. Spot tops in Boston were quoted at 54c. on March 3, 58½c. on March 17 and 58c. on March 31, thus holding their gains a shade better than did futures.

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London Wool Sales Close Lower

The London Wool Sales closed March 29 with a good tone according to a cable received by the Foreign Service of the Bureau of Agricultural Economics. Germany and Central Europe dominated the market especially for greasy and scouring merinos. Bradford bought moderate quantities of merinos and greasy crossbreds but the French buyers were not very active at these sales.

Compared with the close of the previous series of wool sales prices were as follows: scoured merinos 5 to 7½% lower; scoured lambs wool 5% lower; fine greasy crossbreds were 15% lower; medium and low crossbreds 10% lower; Punta Arenas and Falkland Island wools were 5 to 10% lower; fine slipes were down 5%; and medium and low slipes were 5 to 10% lower.

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International Conference Wants Better Wool Statistics

The executive committee of the International Woolen Federation held a meeting in February in Paris with M. Maurice Dubrulle, president of the "Comite Central de la Laine" presiding. It was decided to appoint a committee in conjunction with the International Chamber of Commerce for the purpose of compiling more comprehensive statistics on world production and consumption of wool.

An important decision was also taken concerning pending litigation with Australian producers. The Committee decided: To oppose a minimum price on raw wool markets; to maintain the draft allowance; to recommend the suspension of sales from July 15 to the end of August.

•

No New Set-Up Proposed for American Woolen

The annual meeting of the American Woolen Co. was held in Springfield, Mass., March 28. It was one of the shortest on record, lasting only 15 minutes. Messrs. Warner, Montgomery and Hayden were reelected as directors for a three-year term. It was voted to retire the 65,500 shares of preferred stock bought during 1932 by the company. President Noah reported that although the directors had several times discussed the financial reorganization of the company no plan had proven satisfactory.

•

Canadian Wool Cooperative Has Cleared 1932 Clip

The annual convention of the Canadian Co-operative Wool Growers was held in Toronto on March 23. Directors representing every province in Canada were in attendance. President Robert McEwen in his annual address, declared that the stocks of the 1932 clip were reasonably well cleared. He spoke of the development of the market in England for graded Canadian wool which he said was now recognized as the equal grade for grade of any in the world.

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Wool Mill News

American Woolen Co. has sold the Glens Falls Mills and the Moosup Mills, Moosup, Conn., properties to William Dunne, Providence, R. I., and W. E. Clarke, Willimantic, Conn. Mr. Dunne paid $2,550 for the Glens Falls Mills and Mr. Clarke $1,750 for the Moosup Mills. Tax valuation of these properties totaled $100,000.

Pondicherry Mills,. Bridgton, Me., owned by Deering, Milliken & Co., and soon to close, may be kept running. Plans for raising money to buy the plant and also for financing some industry to occupy the Forest Mills, were discussed at a local mass meeting. A committee of 25 was named to act with Chas. Gleason at a conference with R. A. Julia of New York.

Leominster (Mass.) **Mills, Inc.,** has purchased the property of the old Leominster Worsted Co. A group of business men in the city plans to manufacture women's wear fabrics exclusively. The officers are: President, Howard H. Chase; treasurer, Raymond L. Middlemas; clerk, J. Ward Healy; manager, Alphonse Koppel.

Green River Woolen Mills, Inc., Pittsfield, Mass., at mortgage sale last month was bid in at $39,000. Sale included land, buildings and machinery of this 100-loom concern. The woolen and worsted and knitting machinery of this mill and of the **Silver Lake Worsted Mills** will be sold at auction on April 11 and 12 by order of trustee.

Ohio Carpet Co., West Warren, Mass., has bought the Thorndike No. 3 mill in West Warren and is equipping it with 40 looms and processing equipment for the manufacture of stair and automobile carpet. The new equipment was purchased from the **Ramshead Mills** (of American Woolen Co.), Lowell, Mass.

Forstmann & Huffmann Co., Passaic, N. J., has plans for a new one-story boiler plant at mill, about 40x75 ft., estimated to cost over $20,000, with equipment. Work will begin at once.

Kenwood Mills, Inc., Rensselaer, N. Y., of C. F. Huyck & Sons, Albany, N. Y., have arranged for change of name to **Kenwood Woolens, Inc.**

Chatham Mfg. Co., Elkin, N. C., has completed the installation of a Westbrook freight elevator 2,500 lbs. capacity.

Dri-Wool Products Corp., Cleveland, Ohio, has been chartered, with a capital of $25,000. Principals of the new concern are D. M. Donley, E. M. Gardner and A. M. Mueller. The firm is represented by Harold Gilbert, 350 Madison Ave., New York City.

Collins & Aikman Corp., Philadelphia, Pa., has filed plans for new multi-story addition to mill at Fifty-first and Viola Sts., and for improvements in present plant, for which general contract has recently been let to Turner Construction Co. Work will cost about $88,000, with equipment. H. M. Wilson Co., Eighteenth and Brandywine St., is engineer.

Buffalo Creek Woolen Mills, Worthington, Pa., operated by Peter Graff & Co., Inc., has let general contract to Shaffer Lumber Co., Kittanning, Pa., for rebuilding of mill recently destroyed by fire, with loss over $100,000, including machinery. New unit will be three-story, 70x90 ft., brick and concrete, occupying site of former mill.

Brunswick Worsted Co., Pawtucket, R. I., has bought the Glens Falls Mill, Moosup, Conn., owned by William Dunne, Providence, R. I., and formerly the property of the American Woolen Co. Machinery is being moved from present location in Central Falls, R. I., and operations will start May 1.

Stillwater Worsted Mills, Harrisville, R. I., is reported to have made net profit of $10,636 for 1932. Inventories were reduced, a quantity of debentures retired and receivables were small.

Virginia Woolen Co., Winchester, Va. has recently expended $5,000 in improving its looms and adding to preparatory equipment.

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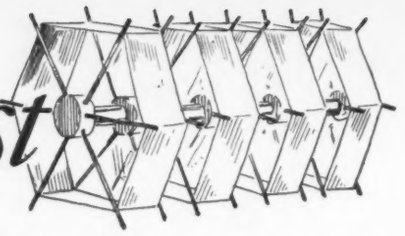
TEXTILE WORLD'S

Silk Digest



THERE seems to be a new attitude of determination in the silk industry. Broadsilk manufacturers have undertaken rather drastic schedules of individual mill curtailment. The move to reduce the number of colors carried by manufacturers has received new impetus. The trade has urged upon Japanese raw silk interests the advisability of an aggressive promotional campaign. The Silk Association has endorsed legislation limiting employment to 30 hours per week during the emergency; and has also urged enactment of interim emergency legislation liberalizing the effects of the anti-trust laws, pending later amendment of those laws.

Possibly the industry may yet prove to Paolino Gerli that he was unduly pessimistic when he recently criticized silk manufacturers for their failure to exert concerted effort toward the promotion of a more stable market.

Lewine, Gerli Hail Commodity Exchange

Heralded by leaders in the silk industry as a beneficial and constructive step, the merger of four commodity exchanges, including the National Raw Silk Exchange, is now being rapidly completed. The new institution, known as the Commodity Exchange, Inc., is expected to start functioning as a separate entity about June 1. The Exchange will be located in the International Telephone Building, Broad and South William Streets, New York. With the Silk Exchange are combined the Rubber Exchange of New York, the New York Hide Exchange and the National Metal Exchange.

It is planned that each of the four markets will maintain its own identity as far as possible, each member being registered in one of the four specific groups, or in the commission-house group or non-trade group. The exchange will be limited to 1,015 members, memberships being paid in at $900 each; this gives the exchange a working capital of $900,000. Jerome Lewine, president of the Silk Exchange, and Paolino Gerli, president of the Silk Association, issued statements praising the merger

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30-Hour Week Urged By Silk Association

Federal legislation forbidding the employment of any person in industry more than 30 hours a week during the existing emergency, was endorsed by the board of managers of the Silk Association of America, Inc., at its annual meeting March 22 at Silk Association headquarters in New York. Passage of such legislation is recommended in the interest of increasing employment and alleviating present conditions. Paolino Gerli, president of the Silk Association, presided. The Board of managers reelected Mr. Gerli as president for the ensuing year.

Enactment of federal emergency legislation permitting economic planning through concerted action and cooperation in production and distribution was also urged, in a resolution passed by the board of managers.

Other officers elected to serve with Mr. Gerli during the coming year follow: vice-presidents, William H. Hubbard, William Skinner & Sons; Otto Froelicher, The Schwarzenbach Huber Co.; and Henry E. Stehli, Stehli Silks Corp.; secretary and treasurer, Ramsay Peugnet; member of the executive committee, John P. Maguire, Textile Banking Co., Inc. Thomas B. Hill, C. K. Eagle & Co., Inc., was elected ex-officio member of the board of managers and Henry Schniewind, Jr., Susquehanna Silk Mills, was re-elected ex-officio member of the board.

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Japanese Delegate Favors Silk Campaign

Armed with abundant evidence that the American silk trade, including Japanese importers here, favor a silk promotion campaign, Tatsuji Hara, Japanese Government representative left New York for Tokio on April 3. The campaign if decided upon, will be financed by the Japanese, and will aim to educate the American people, both the silk industry and the consumers, on the qualities and advantages of silk. Mr. Hara, who came here to study the question, took home a petition signed by leading American manufacturers, strongly urging such a campaign here by the Japanese.

Mr. Hara arrived a month ago as a member of the Japanese Government's Raw Silk Intelligence Bureau which has just opened permanent offices at 261 Fifth Ave., New York. On leaving he indicated that the members of the Bureau were convinced of the need of action to stimulate silk demand.

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Little Change in Market

The various difficulties of the last month, notably the bank holiday, and the uncertainties in the Orient, have left raw silk levels practically unchanged. Complete stagnation of buying by broadsilk mills marked the first few days of the banking paralysis which was followed by a strong inflationary tone at the fabric end, numerous silk weavers announcing price advances. This stimulated moderate flurries in the Japanese division of the primary market, but these were not sustained. The chief gain, as noted by importers has been in market sentiment. Early in April it was reported that E. Gerli & Co. had completed plans for purchase of a quantity of Italian silk.

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Fabric Sales Off 12.6%

An increase of 8.3% in February yardage sales of broad silks, compared with February, 1932, but a decline against the preceding month this year is reported by the Silk Association of America, Inc. Sales decreased 12.6% as compared with January. Stocks in the hands of manufacturers on Feb. 28 were 18% lower than on Feb. 29, 1932, and 2.7% higher than on Jan. 31, 1933.

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Showerproofed Silk

Cavalite, a new rainwear material, has been announced recently by the Fabrikoid Division of E. I. du Pont de Nemours & Co. The new material consists of a special rubber compound applied to a pure silk fabric. The finished product has the appearance of leather with a silken sheen. Its weight is so light that women's raincoats made of it weigh less than a pound.

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Centralized Selling In Silk Field

Silk industry divisions, particularly the greige goods group expressed keen interest this month in the recent decision of the U. S. Supreme Court in the Appalachian Coals, Inc. case, with respect to centralized selling. The greige goods group viewpoint as expressed by certain leaders is that the decision clarifies the legal status of centralized selling, since the court holds that such selling through an organization is not illegal in itself and would be so only if an effort were made to control prices.

Take-up in Throwing

Instructions on how to compute percentage of twist take-up in any thread have been sent out to throwster members of the Throwsters' Research Institute. Accompanying these instructions the Institute sent a twist take-up table (published herewith) giving the percentage of take-up for each twentieth of an inch actual take-up of thread. The Institute's statement comments that there has been much confusion regarding proper methods of reaching the take-up percentage, even the commercial laboratories using two methods. The following is the procedure recommended: "Divide the inches shown on the take-up scale by the inches between the clamps plus the inches shown on the take-up scale. Example: 10 in. of thread being tested shows 1.15 in. take-up on the scale. Percentage of take-up is figured by dividing 1.15 by 11.15, which gives 10.3%."

—Twist Take-Up Table—
—Based on 10-In. Length of Yarn Between Clamps—

Elongation 1/20 Inches	Percentage Take-Up	Elongation 1/20 Inches	Percentage Take-Up
1	.5	51	20.3
2	1.0	52	20.6
3	1.5	53	20.9
4	1.9	54	21.2
5	2.4	55	21.6
6	2.9	56	21.8
7	3.4	57	22.2
8	3.8	58	22.5
9	4.3	59	22.8
10	4.8	60	23.0
11	5.2	61	23.4
12	5.8	62	23.6
13	6.1	63	24.0
14	6.5	64	24.2
15	7.0	65	24.5
16	7.4	66	24.8
17	7.8	67	25.0
18	8.2	68	25.3
19	8.7	69	25.6
20	9.1	70	25.9
21	9.5	71	26.2
22	9.9	72	26.4
23	10.3	73	26.7
24	10.7	74	27.0
25	11.1	75	27.3
26	11.5	76	27.5
27	11.9	77	27.8
28	12.2	78	28.0
29	12.7	79	28.3
30	13.0	80	28.5
31	13.4	81	28.8
32	13.8	82	29.0
33	14.1	83	29.3
34	14.5	84	29.5
35	14.9	85	29.8
36	15.2	86	30.0
37	15.6	87	30.2
38	16.0	88	30.5
39	16.3	89	30.8
40	16.7	90	31.0
41	17.0	91	31.3
42	17.3	92	31.5
43	17.7	93	31.7
44	18.0	94	32.0
45	18.4	95	32.2
46	18.7	96	32.4
47	19.0	97	32.7
48	19.3	98	32.8
49	19.7	99	33.1
50	20.0	100	33.3

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Stehli Stresses Curtailment Need

Responsibility for overproduction of broadsilks and subsequent unsettled market conditions rests with manufacturers and converters of finished goods, Henry Stehli, vice-president of the Silk Association of America, Inc., and chairman of the association's piece goods division told weavers and converters at a meeting held March 23, at Silk Association's New York headquarters. Watching demand, studying facts, and taking immediate action to adjust to market fluctuations are vital, Mr. Stehli said. The meeting was attended by a representative group of silk weavers and converters. Paolino Gerli, Association president, also spoke.

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Optimism Keynote of Silk Ass'n Report

Optimism is the keynote of the 1933 report of the Silk Association of America, which has just been issued by Ramsey Peugnet, secretary. The report, much condensed, covers two broad aspects of the association's activity: first, general services for members, and second, specialized and industrial group services. The need for a publicity campaign to promote use of silk in this country is emphasized; other features are descriptions of the achievements of the Fashion Bureau and regular reports on industrial trends. Research and statistics, educational work, traffic, legislation and misbranding are covered together with synopses of conditions in the various silk divisions.

•

March Imports 42.7% Below 1932

Raw silk imports during March were 42.7% lower than during March 1932, the Silk Association of America, Inc., reports. March deliveries to mills showed a decrease of 16.7% as compared with the same month of last year. March imports were 22,289 bales as compared with 23,377 bales during the previous month and 38,866 bales during March, 1932.

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New Color Limit Plan

Among the numerous constructive plans initiated in the broadsilk industry during recent weeks is a much-needed movement to reduce the number of colors carried by individual mills. The idea was projected by several style factors and the plan has been crystallized into workable form by Jules Foreman and Everett Meyer of Foreman Silks and Haas Bros. Fabrics Corp., who have studied the problem from the individual viewpoints of their respective organizations.

The project would cut the number of silks carried down to 25; these colors would be selected by a representative style body.

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Silk Mill News

Atmore (Ala.) **Silk Mills,** are setting up machinery and when the new plant is finished will employ about 150 persons. This mill will wind and twist and the Brewton (Ala.) plant will weave.

Sidney Blumenthal & Co., Inc., Shelton, Conn., is erecting a new plant for softening water used in dyeing plush and velvets. The building will be 27x 56 ft., 24 ft. high, sides constructed of 24 gage sheet steel. Hungerford & Terry, Clayton, N. J. are supplying the 2,000,000 gal. per day Inversand Zeolite water softener.

Willimantic (Conn.) **Silks, Inc.,** have adopted a full-time production schedule on three-shift day basis, each 8 hrs., giving employment to about 850 operatives, including those employed at subsidiary mills.

Sauquoit Silk Mfg. Co., Philadelphia, Pa., plans to reduce its capital from $5,250,000 to $2,500,000.

Nazareth (Pa.) **Silk Co.,** has been organized to operate a mill for manufacture of broad silks. New company is headed by Bernard Clemens, Wood St. and Mauch Chunk Ave., Nazareth, and Walter S. Blose, 1833 West Livingston St., Allentown, Pa.

Belding - Heminway - Corticelli Co., Putnam, Conn., is installing a 10,000 gal. per hour Inversand water softener made by Hungerford & Terry, Inc., Clayton, N. J.

Stehli Silk Mill, Waynesboro, Va., has closed for an indefinite period, not to resume until market warrants.

Dover Silks, Ltd., Pt. Dover Ont., has been placed in the hands of the Trustee & Guarantee Co., Brantford, Ont., as receiver. Dover Silks Ltd., was organized in 1928. It operates 40 looms on satins and other broad silks.

Riverside Silk Mills Ltd., Galt, Ont., in its annual report for 1932 shows net earnings of $33,835 compared with $55,-086 in 1931.

Brupbacher Silk Mills, Ltd., Valleyfield, Que., will likely be taken over by **Grout's Ltd.,** St. Catharines, Ont., of which P. R. Watson is managing director. Brupbacher failed in October 1932. The plant which was erected in 1931 is a thoroughly modern silk mill.

TEXTILE WORLD'S

Rayon Digest

AS an antidote to the distressing news of a price-cut in rayon, came the news of the appointment of former Governor O. Max Gardner of North Carolina as legal adviser to a group of synthetic yarn producers.

The price-cut was a blow to the hopes of those who believed price degeneration had been arrested. It is not the official reduction itself which we deplore, but the market weakness which preceded it and which apparently necessitated formal recognition of lower levels. It is doubtful if the new prices will increase the consumption of rayon materially; on the other hand they will add to the grief of mill consumers and to the losses of yarn producers. The whole development represented a backward step at a time when industry was visioning a chance to move forward.

On the other hand, the appointment of a man of Gov. Gardner's caliber promises that the industry will have excellent advice during a period when new legislation is being produced almost daily and when a sound interpretation of that legislation is vital. The selection is a particularly happy one. Not only has Gov. Gardner's personal experience given him an intimate knowledge of the needs of the textile industry, but the nation-wide reputation gained by the character of his public service in his own State promises a type of counsel which should do much toward helping the synthetic fiber industry to re-establish sanity.

Gardner Appointed Legal Adviser

The appointment of O. Max Gardner, former Governor of North Carolina, and president of Cleveland Cloth Mills, Shelby, N. C., as legal adviser in Washington of the synthetic yarn industry, was confirmed by manufacturers in New York on April 4.

The appointment of Mr. Gardner was first interpreted in the New York market as a preliminary step toward the revival of a formal trade association in the synthetic yarn division, but it was stated authoritatively that this is not the case. This industry has had no trade organization since the Rayon and Synthetic Yarn Association became inoperative two years ago.

Interviewed in Washington by the editor of TEXTILE WORLD, former Gov. O. Max Gardner of North Carolina confirmed the fact that he had been appointed legal adviser for a group of synthetic yarn manufacturers and expressed keen anticipation of the opportunities for service which this connection promises. He stated that his long association with the textile industry in his State, and his interest in synthetic fiber development as a consumer of those products, made him particularly sympathetic with the needs of the yarn producers in the new era which he visualizes as now opening up.

Gov. Gardner has opened offices in the Woodward Building in Washington and may later undertake similar activities in other lines which would not conflict with his synthetic yarn connection. He will also continue his association with the Cleveland Cloth Mills Co. and with other mill interests in North Carolina.

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Trade Divided on Selling Standards

A marked difference of opinion has developed among rayon yarn manufacturers regarding plan initiated last month by the Silk Association of America, to develop a standardized code for the sale of rayon yarn. Inquiry among sales managers of leading synthetic yarn producing companies revealed two viewpoints. Those opposing the action say they regard it as unnecessary, adding that the contract relationship between themselves and their customers is satisfactory as it stands at present; they feel that a rigid code might complicate rather than improve the situation. Other rayon spokesmen endorse the Silk Association project however, and are planning to cooperate with the aim of reducing the number of last-minute cancellation of orders of customers. The Silk Association is still working on plans for the appointment of a committee to study the question.

5-10c Price Cut on Viscose Yarns

A new price cut movement in viscose process rayon yarns was precipitated April 3, when the Viscose Co. announced a reduction of 5 to 10c. effective that date, on all numbers. It was tacitly understood other producers would follow suit. The reduction which brought 150 denier down to 50c per lb., was said to have been inspired by persistent underselling on the part of competitors. It is believed that the new levels will mean below-cost selling for some of the rayon companies. The Viscose revision represents a cut of 10c on 150 denier and finer, 9c on 200 denier and 5c on 300 denier and coarser. The reduction statement made no mention of guarantees, and Viscose executives indicated that the curtailment policy would be continued.

Industrial Rayon Corp. conformed to new levels, adding a differential of 5c. per lb. on dull yarns; similarly Tubize Chatillon Corp. conformed to the cut, but quoted Chardonize dull-lustre nitro yarns 5-10c. higher. Du Pont Rayon Co. made similar changes in viscose yarns.

The new Viscose list follows:

Denier & Filament	1st Quality Skeins	1st Quality Skeins	1st Quality Cones
50/14	$1.00	$0.95	$1.05
75/30	.80	.77	.85
100/40	.65	.62	.70
125/36	.55	.52	.55
150/24 & 40	.50	.48	.50
150/60	.55	.53	.55
200/30	.46	.44	.46
200/75	.51	.49	.51
300/44 & coarser	.42	.40	.42

The above prices for Bright & Dulesco Yarns Chalkelle — $0.05 per lb. extra.

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Sand Crepe Activity Helps Yarn Plants

Interest of both rayon yarn producers and weavers of synthetic fabrics was directed toward sand crepe sheers during March when a sharp rise in demand for this line precipitated a fabric shortage. Sand crepe is a heavyweight line which goes largely into $6.50 dresses for spring and early summer wear. The fabrics are woven mostly of 100 denier yarn, and the spurt of popularity which the goods is enjoying has helped yarns.

Sand crepes began showing strength at the beginning of the year. The cutters found them particularly suitable to current demand, especially the field flower prints, and orders for fabrics took a decisive rise about a month ago.

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Paris Highlights Lacquered Rayons

Lacquered rayons are outstanding in the spring and summer collections of the Paris designers, according to reports gathered by the DuPont Style Service. Among the novel uses of syn-

thetics featured are lacquered rayon faille and grosgrain ribbons, rayon scarves, and lacquered satin for shoes. Practically all Paris offerings include gowns of lacquered materials in the new lines. Patou, Callot, Jane Regny give particular emphasis to rayons.

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Output Now 70%, Organon Estimates

Production of rayon yarns during March was curtailed to about 70% capacity, states the *Textile Organon*, published by Tubize Chatillon Corp., in its current issue. This would give an average rate of production for the first quarter of the year of about 90%, or, on the basis of 160,000,000 lb. annual operating capacity, about 35,000,000 lb. of rayon produced in three months.

Stocks on hand at the end of March, states the paper, probably amounted to five to six weeks supply as against a supply sufficient for less than three weeks at the end of 1932. It is to be noted that this is the first time that a real curtailment program was ever put into effect while stocks were still "normal."

The *Organon* commented further: "In previous instances of curtailment, producers only too often waited until stocks of 10 and 12 weeks caliber were burdening warehouses. Promptness in curtailing in March thus represents distinct improvement in technique of production-control by companies."

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Rayon Suit Decision

Under a decision handed down March 27 in the U S. District Court, New York, the New Jersey Zinc Co., Inc., is held to be legal owner of a patented process involving the incorporation of pigments in strands of rayon, which process was originated by James A. Singmaster and has been commercially developed by the Tubize Chatillon Corp. It has not yet been decided whether an appeal will be taken, by the Tubize company. The value of the patent rights in question has been placed at $5,000,000: it involves such types of yarn as the Tubize "Chardonize."

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New Novelties Needed To Revive Underwear

The recent decline in demand for rayon underwear is being attributed by distributors to the lack of new ideas in manufacture, and mills are being urged to develop some original approach which will help sales. The problem occupied the attention of both knitters and rayon producers during March, and both divisions are hopeful that some method of stimulation will be worked out. The issue is an important one for the yarn producers.

It is not believed that either low silk prices or the quality of rayon underwear are major causes of the decline. The agitation last year for improvement in manufacture has brought some results, and rayon underwear today meets normal requirements as regards wear and washing.

•

Industrial's Fabric Output

Operations in the rayon underwear fabric mill which is part of the Cleveland plant of the Industrial Rayon Corp., have increased to such a degree that now this mill consumes 6,000,000 lb. of yarn annually. This consumption affords outlet to the bulk of the yarn produced in Industrial's Cleveland plant. The underwear fabric mill comprises 342 Wildman knitting machines, producing between 20,000 and 25,000 lb. of circular fabric daily.

•

Bemberg Shows Fashions

Distinctive constructions in day and evening fabrics for the new season featured a fashion show held by the American Bemberg Corp., March 22, in the Theater Modern, atop the Chanin Building, New York. Crepes and sheers were dominant, the fabrics including a wide range of novelty crepes, chiffons and lacquered sheers. Mrs. Louise Huston presented the models.

•

Celanese Shows Summer Styles

A wide range of summer styles, both resort and town styles, were shown by the Celanese Corp. of America, in a display at its New York offices, March 15. Attendance was restricted to the cutting-up trade, the aim being to show Celanese dresses retailing at $10.75 and upward. Various crepes were shown, and lacquered fabrics were given prominence. The display comprised 40 garment models, covering the whole field of sport, day and evening wear. The novelty fabrics included Celinan, a fabric resembling linen, a new type of Celanese lace, Striano crepe, a cross dye, and Homespun, a woolly crepe.

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Rayon Mill News

S. Levine, New York, has leased mills No. 1 and 2 formerly of the Belding-Heminway Co., Belding, Mich. Mr. Levine purchased outright the mill equipment and raw materials. Replacements necessary to put machines in operation will be started immediately. The plant will manufacture rayon cloth, one of the mills handling yarn and the other the weaving detail, according to Lee Moore, formerly with Belding-Heminway, who has been selected as superintendent of mill No. 1.

American Enka Corp., Enka, N. C., has organized a class of 50 student employees, according to A. J. L. Moritz, vice-president and manager of the plant. As vacancies occur in departments, these reserves who have already mastered the machines get the jobs.

Tubize Chatillon Corp., in its first published statement since the merger of Tubize Artificial Silk Co. of America and American Chatillon Corp., which took place in January, 1930, shows gross earnings for 1932 of $955,000, before deducting interest on bonds amounting to $140,000 and $1,000,000 for depreciation charges. The net loss after these deductions amounts to $185,000. The company's balance sheet shows total assets of $24,546,773 of which $4,257,982 are current assets.

Industrial Rayon Corp., Cleveland, Ohio, has awarded general contract to George A. Rutherford Co., 2725 Prospect Ave., for construction of a second new addition to local mill, one-story, 40x222 ft., to be used primarily for storage and distributing service. It is estimated to cost about $35,000, with equipment. Same contractor is completing construction of two new wing extensions. Entire program will cost close to $110,000. Company has plans in progress for three new additions to branch mill at Covington, Va., three-story, 45x60 ft., one-story 100x220 ft., and one-story, 25x30 ft., respectively. Estimated cost about $100,000, with equipment. Christian, Schwarzenberg & Gaede Co., 1836 Euclid Ave., Cleveland are architects for all buildings.

Canadian Celanese Ltd., Drummond, Que., in its report for the year ended Dec. 31, 1932, shows operating profits for the period at $1,301,190 compared with $1,260,449 in 1931. Net profits of $718,881 are shown equal to $7.98 on preferred and 35c on common shares.

TEXTILE WORLD'S

Knit Goods Digest

THE "Knit-for-Profit" movement sponsored by the National Knitted Outerwear Association will be watched with the closest interest by all branches of the textile industry. The keynote of the movement was sounded at the association's annual convention in February when W. L. Churchill addressed members on "Pricing for Profit." Since that time, steps have been taken to make this slogan a practical working principle.

All other industrial topics appear academic and anemic in contrast to the subject of profits. The outerwear association may be regarded as a laboratory from which, it is hoped, some further information on how to make a profit will be available.

Full-Fashioned Hosiery Stocks Decline 3.4%

A decline of 3.4% in full-fashioned hosiery stocks as of Jan. 1, 1933, against the preceding year, is reported by the Industrial Research Department of the University of Pennsylvania. This organization based the announcement on figures compiled in its semi-annual survey, held in cooperation with the National Association of Hosiery and Underwear Manufacturers. The survey covered mills operating 11,027 full-fashioned hosiery machines, representing 74% of the equipment in place on March 1, 1932.

Examination of the report shows numerous interesting features. The stocks of 39-gauge hosiery declined 9.2% and that of 42-gauge types fell 4%. The 39-gauge decrease confirms the general trend toward finer stockings; this was further shown in the fact that 45-gauge merchandise on hand increased 1.9%. It was clear that new demand focused mainly on the 45-gauge, since the 48-gauge declined 8.7%.

The stocks on hand Jan. 1, 1933, in all mills surveyed totaled 2,937,640 dozen pairs. The ratio of stock decrease was considerably less than that shown in 1930 and 1931. One significant point was that, while the entire output declined, stock increases were reported by 54% of all the mills covered in the survey.

•

Full-Fashioned Hosiery Union Bars Wage Cut

The deadlock between the full-fashioned hosiery manufacturers operating union mills, and the American Federation of Full-Fashioned Hosiery Workers on the wage issue, became more acute at the end of March when the union again refused to consider a wage cut. The manufacturers, through the Full-Fashioned Hosiery Manufacturers of America, asked for an emergency reduction in the scale covered in the contract which will expire Aug. 31. The mill-owners claim continued payment of the union scale puts them under a severe handicap in view of rates being paid in many non-union hosiery mills. Further attempts between the employers and the workers' representatives to reach an understanding are being made.

•

Spinners Back "Knit-For-Profit" Move

A further step in the "Knit-For-Profit" movement of the National Knitted Outerwear Association was taken by representatives of seventeen leading spinning companies who pledged their complete support to the drive at a meeting at the Governor Clinton Hotel in New York City, March 27th. Pointing out how volume frenzy could be ended by instituting planned production schedules and scientific budgeting principles among the member mills, Sidney S. Korzenik, secretary of the association, recommended that spinners use their credit influence to demand scientific mill operation. The meeting was presided over by Harold R. Lhowe, counsel and executive director of the association.

•

Hemphill Measurements Differ From Association's

Lengths of hosiery and folded cuffs specified by Hemphill Co., Pawtucket, R. I., in its Banner 1933 Memo Book differ from those offered for adoption as commercial standards by the National Association of Hosiery and Underwear Manufacturers to the extent in some instances, of ¼ to ½ in. on the short side. The memo book also contains recommendations for cylinder diameters and numbers of needles for gages in common use; a correlated table of cylinder cuts, gages, points, and sinkers; yarn-conversion tables; correlation of shoe and hosiery sizes; and rib-top lengths. Average measurements are based on machine orders.

•

Congested Swimsuit Demand Foreseen

The advent of spring has brought a moderate improvement in outerwear orders, and both sweater and swimsuit mills manufacturers are hoping that this is the beginning of some real demand. Volume to date, however, is well below even last year's figure and prospects point to a difficult situation when orders do start, as mills may have trouble in accelerating their output to meet the rush. Demand for swimsuits was fairly good when the season opened last fall but it fell backward steadily since; the financial holiday was a bad blow to this division. Retail stocks for the opening of the warm weather season next month are practically nil and knitters forecast a flood of last-minute buying which their supplies will not be sufficient to meet.

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Ribbed Underwear Outlook Favorable

The tone of the heavyweight underwear division is firm, thanks to the strong policies adopted by mills on prices and to a healthy spurt of advance buying. Several companies withdrew prices in March. Sales reports showed at the end of the month that volume to date was well above the first part of 1932, a few firms claiming as much as 50% increase.

Hemphill Co.

New half-hose styles, showing plaid, color-within-color, and 2-color hand embroidered effect.

Guide to Knitting Arts Exhibition

(Continued from page 53)

Textile American, Boston. Booths 297, 318. Textile publishers.

Textile Bulletin, Charlotte, N. C. Booth 81. Textile publishers.

Textile Machine Works, Reading, Pa. Booths 233-236, 279-282. Samples of hosiery produced on Reading full-fashioned machines.

Textile World, New York. Booths 252, 263. Textile publications, directories, catalogs, technical books, etc.

Textiles, Inc., Sales Co., Gastonia, N. C. Booths 180, 181. Cotton, spun-rayon, and wool mixture yarns; fabrics made from novelty yarns.

Torrington Co., Torrington, Conn. Booths 210, 211. Latch and spring-beard needles and accessories used in production of full-fashioned hosiery. Featuring new stainless-steel parts for full-fashioned production.

Tubize Chatillon Corp., New York. Booths 170-172. Nitrocellulose, acetate, and viscose yarns, and fabrics and garments made therefrom, including Chardonize, a dull-luster yarn.

Union Special Machine Co., Chicago. Booths 290, 291, 324, 325. Class G 79100 fagoting and picoting machine, Class 39200 hemming machine, Class 35700 felling machine, Class 39200 overseaming machine, Class 39100 hosiery hemming machine, Class 41200 hosiery seamer, Class 19300 hemming machine for bathing suits, Class 51700 machine for facing underwear, Class 51400 machine for attaching button facings.

United Elastic Corp., Easthampton, Mass. Booth 329. Elastic and non-elastic braids, lacings, cords, etc.

U. S. Ring Traveler Co., Providence, R. I. Booth 155. Ring travelers for throwsters and novelty yarn manufacturers, including the Bowen vertical silk and rayon traveler.

U. S. Textile Machine Co., Scranton, Pa. Booths 363, 364. Standard short-model double-deck twister.

Universal Winding Co., Boston. Booths 114-116, 157-159. Winding machines. Featuring standard machines and some new adaptations.

Viscose Co., New York. Booths 240, 241. Rayon yarns and fabrics and garments made therefrom.

Wildman Mfg. Co., Norristown, Pa. Booths 310-312, 353-355. Single-section full-fashioned hosiery machine; circular machines for new designs and fabrics.

Willcox & Gibbs Sewing Machine Co., New York. Booths 300-302, 313-315. Flat-lock machine for seaming rayon and athletic underwear and similar garments; Feldlock and Feldlock Dualfeed machines for lap-seam felling on shirts, pajamas, underwear, overalls, and workshirts; lock-stitch, over-lock and intermittent ruffling, chainstitch label, Cornely and Uniart embroidering machines.

Jacques Wolf & Co., Passaic, N. J. Booth 393. Specialties for dyeing, finishing, stripping, softening, scouring, lubricating, and wetting-out textiles. Featuring new line of soluble silk oils for throwsters and knitters of silk and rayon.

Thos. Wolstenholme Sons & Co., Inc., Philadelphia. Booths 340, 341. Underwear, hosiery, sweater, zephyr yarns.

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Hosiery Length Standard Approved

L. R. Gilbert, of the Bureau of Standards announced April 1, that the commercial standard for hosiery lengths, proposed Jan. 12, had been approved by a majority of knitters and would become effective for production and clearance of existing stocks as of July 1, 1933.

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Hosiery Mills Busy, Advance Prices

Certain Southern and Middle-Western hosiery mills enjoyed a sharp pick-up in demand during March, and were encouraged to announce substantial advances in prices; these companies include Trojan Hosiery Mills, Indianapolis, Ind., McPharr Hosiery Mill and Elizabeth James Hosiery Mill, both of Marion, N. C.

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Knitting Mill News

Princeton Corp., Watertown, Conn., has purchased from Attorney Joseph P. Tolins, trustee, machinery of **Princeton Rayon. Inc.,** following liquidation proceedings to satisfy a judgment against the latter corporation. Operations will be continued in the same mill.

Montezuma (Ga.) **Knitting Mill,** temporarily closed while undergoing repairs, is scheduled to resume operations about March 27.

Malone Knitting Co., Springfield, Mass. has added 10,000 square feet to its plant floor space, enabling additional machines to be installed and improving operating conditions. Production is reported as 20% ahead of last year and 50% ahead of 1929.

Propper-McCallum Hosiery Co., New York, reports consolidated net loss for 1932 of $59,389 against net loss of $314,720 in 1931.

Hudson Silk Hosiery Co., Charlotte, N. C., has purchased ten additional gangs of No. 30 winders from the Universal Winding Co. These are to be used in a new throwing plant.

Textile Parts Co., Gastonia, N. C., has purchased 20 Scott & Williams ribbers, to be installed at once for the making packing and wiping cloth.

Royalton Knitting Co., has taken over the old Mid-Royal Knitting Mill at Middletown, Pa., and is making hosiery with 20 employees.

Artcraft Silk Hosiery Mills, Philadelphia, have purchased through Robert Reiner, Inc., Weehawken, N. J. several 51-gage Einsiedel-Reiner high-speed full-fashioned machines. The initial installation consists of two sets fully equipped for making all styles.

Bower & Kaufman, Philadelphia, has discontinued operation of Philadelphia mill. The fine gage hosiery machines will be moved to another location and the coarser gage machines disposed of.

Lehigh Silk Hosiery Mills, Inc., Philadelphia, Pa.; the mill and dye house formerly occupied by this company at Jasper and Butler Sts., have been leased by Sidney Bailey, Jr., and associates, for a term of years. Plans are said to be under way for resumption of operations as a knitting mill.

Laurel Hosiery Co., Reading, Pa., recently chartered, has taken over mills and properties of **Laurel Hoisery Co.,** West Reading and North Reading, and **Weinerth Knitting & Machine Co.,** Reading, and will consolidate the two interests.

Jac Feinberg Hoisery Mills, Inc., Rock Hill, S. C., recently organized and now occupying former local mill of **Rock Hill Hosiery Co.,** is negotiating with owners of property, Rock Hill Hosiery Building Corp., for a new addition to plant to double present floor space. It is proposed to install about 20 new knitting machines.

Cullum & Boren Co., Dallas, Texas, is installing new and improved knitting machinery for the manufacture of men's and women's sweaters.

Milwaukee (Wis.) **Hosiery Co.,** plans rebuilding of portion of knitting mill, recently damaged by fire with loss approximating $25,000.

A. J. Brown Co., Ltd., Collingwood, Ont., is considering purchase of property at Kincardine, Ont., for a new mill. Present plant will be removed to new location and capacity increased.

Mercury Mills Ltd., Hamilton, Ont., shows an operating loss of $39,156, and a total loss of $380,631 for 1932 against a loss of $123,302 for 1931.

Penmans Ltd., Montreal Que., report for 1932 shows net earnings of $187,493 against $145,033 for 1931, even though sales, amounting to $4,766,707, were about 10% less than in 1931.

TEXTILE WORLD'S

Processing Digest

THAT the cotton printers know the way out of the morass into which they have wandered was evidenced by the frank statement made by Henry B. Thompson, of the United States Finishing Co., at a recent meeting of the National Association of Finishers of Textile Fabrics. That they are determined to retrace their steps along that path was indicated by the announcement last month of a 15% increase in printing prices by companies constituting some 80% of the industry.

For our editorial this month we can do no better than to abstract Mr. Thompson's address: "We are paying our stockholders no dividends; we have cut salaries and wages to the breaking point; the temptation is to reduce quality. In the last three years we have seen our printing prices drop 40%. The reason that we find ourselves in this position is due to our own lack of courage and our own lack of trust in each other. The business of printing cotton fabrics has not suffered from a diminution of yardage, but from a relentless warfare within the industry itself. It is not true that there is overproduction or that there are too many printing machines. The custom of all-night running of certain concerns is largely responsible for the present chaotic condition of the industry. Elimination of night running and adherence to a 50-hour week would aid the stabilization of costs, largely eliminate vicious competition, and go a long way toward curing our troubles. It means disaster to go on month after month, year after year, doing work at a loss."

Textiles and Chemistry

Several papers of interest to the textile chemist were presented at the 85th meeting of the American Chemical Society, held in Washington, March 26 to 31. Those read before the divison of dye chemistry included "Use of Stannous Chloride in the Evaluation of Dye Mixtures," by J. A. Kline; "Application of Spectrophotometry to Studies of the Fading of Dyed Materials in Light," by Wm. D. Appel and Wm. C. Smith; "Wool Dyeing from the Viewpoint of Electrical Charges on the Dye and on the Fiber," by Milton Harris; and "Control of Temperature and Relative Humidity in Testing the Fastness to Light of Dyed Textiles," by R. O. Hall. Those presented before the division of cellulose chemistry included "Studies on Regenerated Cellulose," by S. S. Kistler and Howard Smith; "Recent Developments Relating to Surface Properties of Cellulose Fibers," by Harold DeWitt Smith; and "Dyeing of Cellulose in Relation to the Structure of the Material," by R. E. Rose.

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A.A.T.C.C. Notes

An allocation of $5,000 by the Textile Foundation to complete research now under way and an additional grant of $3,600 for the study of textile printing pastes was announced at the 79th meeting of the Research Committee of the American Association of Textile Chemists and Colorists, held Jan. 27 in New York.

At the March meeting of the New York Section, P. H. Stott, of E. I. duPont de Nemours & Co., Inc., delivered a paper on the dyeing of cotton-wool, rayon-wool, and silk-wool mixtures; and A. A. Dessow, of the Interstate Chemical Co., discussed the use of Eulans in mothproofing textiles.

Arthur E. Hirst, of the Carbic Color & Chemical Co., spoke on the application of Indigosols at the March meeting of the Rhode Island Section.

•

Flexible Waterproof Fabric

Revolite, a flexible waterproof fabric, has been developed recently by the Revolite Corp., New Brunswick, N. J., a subsidiary of Johnson & Johnson Co., and Bakelite Corp. In the production of Revolite, the fabric is treated with a special flexible Bakelite Resinoid material which makes it resistant to oil, water, and most cleaning compounds. The material is made in several weights and in various styles, including metallic finishes and printed designs. Among the uses which have been suggested for Revolite are curtains, valances, wall coverings, table runners, raincoats, golf jackets, evening slippers, stage settings, etc. The fabric is said to drape well, clean easily with a damp cloth, and iron readily when wrinkled through use. It is stated also that it is unaffected by soapy water, does not mildew, and does not stiffen or deteriorate with age.

Bakelite-treated fabric

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Impregnation of Textiles with Latex

The article, "Recent Developments in Impregnation of Textiles with Latex," by W. J. R. Hauser, which appeared in our March issue, discussed the results of research conducted in the laboratories of the Revertex Corp. of America. This point was not made clear, as through error, mention was omitted of Mr. Hauser's business connection as vice-president of that company.

•

Sulphonated Oils

An address on "Aliphatic Sulphonates" was delivered before the Lehigh Valley Section, of the American Chemical Society, at a meeting held at Easton, Pa., on March 21, by Ralph Wechsler, technical director, National Oil Products Co. Mr. Wechsler called attention to the fact that the literature on the chemical nature of sulphonated oils is decidedly polemical, mainly because of the variation in the products produced by the investigators due to differences in the methods employed. He stated further that any or all of the following major reactions may take place when sulphuric acid is mixed with castor oil, olive oil, or other fatty glyceride or acid, and the resulting product washed and neutralized: (a) Hydrolysis of glyceride; (b) polymerization; (c) addition of the sulphonic group at various

points in the chain; and (d) hydrolysis of the sulphonated products during washing, with the formation of hydroxyl compounds, lactones, inner anhydrides, esters, etc.

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New Dyestuffs

General Dyestuffs Corp. announces the following new products:

Patent Blue VF, an acid color having the same dyeing properties as Patent Blue V, but giving materially brighter and more brilliant shades.

Fast Red Salt ITR, the stable diazo compound of Fast Red ITR Base, which in conjunction with Naphtol AS-ITR gives dyeings of the same shade and fastness as the base.

E. I. duPont de Nemours & Co., Inc., announces:

Pontamine Fast Orange RGL, a direct color of very good fastness to light, perspiration, and washing, and which differs chemically from other offerings; in shade it is between Pontamine Fast Orange 2GL and Pontamine Fast Brown 4GL.

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Shrinkage in Fulling

Recent investigations of shrinkage in fulling indicate that during the fulling operation the wool fibers are actually stretched, and in their subsequent recovery from extension draw together those parts of the structure through which they had penetrated. In discussing this discovery before the Huddersfield Textile Society, Dr. J. B. Speakman, of Leeds University, stated that the optimum temperature for fulling is approximately 100° F., the ease of extension and power of contraction of the wool fibers increasing rapidly with a rise of temperature to this point, but decreasing rapidly beyond this point. It appears that if this view of fulling shrinkage is correct, certain types of mills, designed to produce shrinkage purely by compressive forces are not necessarily the most efficient. As a result of these investigations one machinery manufacturer has designed equipment which reduces by 50% the time required for fulling union fabrics, and gives an improved handle to the goods. Dr. Speakman stated that there is no reason to believe that this improvement in fulling-mill construction is the last word; rather that there are grounds for expecting revolutionary changes in design.

•

Soluble Oils for Silk

A series of soluble oil specialties for the throwster, knitter, and weaver of silk and rayon has been developed recently by Jacques Wolf & Co., Passaic, N. J. These products are built upon bases of pure non-drying fats, which it is stated, will not develop rancidity or oxidation on the goods if they should be stored in the gray for a long period. They are thoroughly soluble in water; and because of their penetrating quality, aid in the scour or boil-off, rendering the goods soft and suitable for dyeing. Included in this series are the following compounds:

Silk Oil F, for full-fashioned hosiery yarns to enable direct knitting from the cone.

Silk Oil O, for preparing warps so that they will withstand harness and reed friction.

Silk Oil S, for soaking by machine methods to obtain complete exhaustion of the bath.

Rayon Oil W415A, for soaking rayon—including acetate, cuprammonium, and dull-luster yarns—where a soft handle is desired in the finished product.

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Infra-Red Photography and Textiles

Two textile uses for infra-red photography are discussed by P. W. Cunliffe, of the Wool Industries Research Association, England, in the March issue of the *Journal of the Society of Dyers & Colourists.* These uses are, first, detection of faults in dark-colored materials which cannot well be investigated visually and which do not fluoresce in ultra-violet rays; and second, selection of dyestuffs for dark fabrics which are to be as cool as possible for summer.

•

Mercerizers Extend Message of Good Cheer

Dixie Mercerizing Co., Chattanooga, Tenn., has sent an encouraging message to the underwear and hosiery industry which is applicable to the textile industry as a whole. In stressing the fact that textile demand is always present the statement interprets the "New Deal" as renewal of opportunity for profit. It says in part:

"Remember that you have every opportunity to further the success of the new deal by insisting on profits, because the demand for your merchandise has never disappeared and never will. Your industry *doesn't have to* angle for sales on a starvation basis because the demand for good wearing apparel is always present and there is your opportunity.

"The new deal will soon bring you a new hand. When you play it, forget that there are 11 million men out of work and play for the 40 million that are at work. Forget that the national income has been reduced 38 billion dollars, and play for the 40 billion dollars the American public has to spend for merchandise and services every year. Forget that a few bankers and utility magnates have been run out of the game, and remember that everyone left has a new realization that business is fundamentally a service to mankind."

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Processing Plant News

Joseph Bancroft & Sons Co., Wilmington, Del., report net loss for 1932 of $561,704 compared with net loss of $411,622 for 1931.

United States Finishing Co., including subsidiaries, reports, for the year ended Dec. 31, 1932, an operating loss of $266,269, but after allowing for depreciation and interest, less other income, a total net loss of $769,430 is shown. This compares with a net loss in 1931 of $491,212 after charges. It is understood that 75% of the 1932 loss of the U. S. Finishing Co. occurred during the first seven months of the year. Inventories have been reduced and a large part of notes due banks paid off.

Textile Dyeing & Printing Co., Fairlawn, Paterson, N. J., has approved plans for a new two-story dye house addition, reported to cost about $24,000, with equipment. John C. Van Vlandren, Paterson, is architect.

Commercial Piece Dyeing Co., Paterson, N. J., has approved plans for a new one-story and basement addition to dye house, and will begin superstructure at once. Cost over $21,000, with equipment.

H. C. Bick Co., Reading, Pa., has placed in operation a new Inversand Zeolite water softener furnished by Hungerford & Terry, Inc., Clayton, N. J.

Cobourg (Ont.) Dyeing Co., Ltd., Canada, managed by David C. Dick, founded in 1913, has increased productive capacity to 60,000 yards of finished cloth per week under the management of H. Fullerton.

Universal Silk Dyers, Ltd., Lindsay, Ont., Canada, have gone into voluntary liquidation and the plant has ceased operations. The building and equipment will be disposed of at once.

Guaranty Silk Dyeing & Finishing Co., Ltd., St. Catharines, Ont., Canada, has installed new yarn dyeing equipment for the dyeing of silk and rayon.

PROCESSING IN THIS ISSUE

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QUOTATIONS

At close of business, April 1, 1933.

Prices cover average qualities unless otherwise stated.

Cotton Goods

	April 1	March 1	Mar. 30 1932
PRINT CLOTHS			
27 -in., 64x60, 7.60	2½	2½	2⅞
38½-in., 64x60, 5.35	3½	3	3¼–3½
39 -in., 68x72, 4.75	3 7/16	3 7/16	4½
39 -in., 72x76, 4.25	4¼	4¼	5½
39 -in., 80x80, 4.00	4⅜	4⅜	5½
BROWN SHEETINGS			
36-in., 56x60, 4.00	3¾	3¾	4½
36-in., 48x48, 3.00	4½	3¾	4¾
37-in., 48x48, 4.00	3¾	3¾	4¼
MISCELLANEOUS			
Drills, 37-in., 3 yd..	4¾	4¼	4¾
Denims, 2.20.....	9	8	9½
Tickings, 8 oz.....	10	10	12c
Standard prints....	5¾	5¼	6½

Cotton Waste

Peeler comber	6.25c
Peeler strip	5.25c
White spooler (single)	4.00c

Cotton Prices

Spot Cotton at:	April 1	March 1	For Month High	For Month Low	1932 April 1
New York	6.40	6.15	6.85	6.10	6.30
New Orleans	6.33	5.95	6.80	5.95	6.18
Liverpool	5.06	4.90	5.26	4.72	4.81

FLUCTUATIONS OF FUTURES

	Closed Mar. 1	For Month High	For Month Low	Closed April 1	Net Change
Mar.	5.98	6.90	5.84	....	....
Apr.	6.02	6.73	6.01	6.26	+.24
May	6.06	6.97	5.93	6.34	+.28
June	6.12	6.92	6.11	6.42	+.30
July	6.19	7.12	6.05	6.50	+.31
Aug.	6.26	7.03	6.24	6.57	+.31
Sept.	6.32	7.12	6.31	6.70	+.38
Oct.	6.38	7.50	6.24	6.77	+.39
Nov.	6.44	7.24	6.44	6.85	+.41
Dec.	6.50	7.66	6.37	6.91	+.41
Jan.	6.58	7.65	6.47	6.97	+.39
Feb.	6.63	7.44	6.63	7.04	+.41

AVERAGE PRICE APRIL-MAY, SHIPMENT HARD WESTERN COTTON

F.o.b. New England

	Middling	St. Middling
1⅛-in.	– 8⅛c.	– 9⅛c.
1 3/16-in.	– 9⅛c.	–10¼c.
1¼-in.	–12 c.	–14 c.

Based on New York, July, 6.50.

FOREIGN COTTONS

Alexandria Exchange, Apr. 1		Change
May, Sak	12.81	— ....
April Uppers	10.79	— ....
Apr.-May Shipment c.i.f. Boston (Tariff not included)		
Fully good fair Sak (No. 38)	11.35	.....
Fully good fair to good Uppers (No. 10) (By Anderson, Clayton & Co.)	10.25	.....
India Rough, Calcutta Camilla		6.40
Peruvian Tangius Strict Middling		16
China Tientsin No. 1		8

TEXTILE WORLD'S *quotations have been expanded, as evidenced by this page, to include key items in nearly all textile fields—raw materials, yarns and fabrics. The collection of figures is in response to a display of very real reader interest in quotations.*

Cotton Yarn

CARDED (Average Quality)

Double Carded 2c.—4c., higher according to quality

SINGLE SKEINS OR TUBES (Warp Twist)

4s to 8s	$0.12½	20s	$0.14½
10s	– .13	24s	– .15½
12s	– .13	26s	– .16½
16s	– .14	30s	– .17½

TWO-PLY SKEINS AND TUBES

8s-2	$0.13	20s-2	$0.15½
10s-2	– .13	24s-2	– .16½
14s-2	– .14	30s-2	– .18
16s-2	– .14½	40s-2	– .24

SINGLE WARPS

10s	$0.12½	20s	$0.14½
14s	– .13½	24s	– .15½
16s	– .14	30s	– .17½

TWO-PLY WARPS

8s-2	$0.13	20s-2	$0.15½–$0.16
10s-2	– .13	24s-2	– .16½
14s-2	– .14	30s-2	18 – .18½
16s-2	– .14½	40s-2 ordin.	– .24

HOSIERY CONES (Frame Spun)

8s	$0.13	18s	$0.15 –$0.15½
10s	.13½– .14	20s	.16 – .16½
12s	.14 – .14½	22s	– .17
14s	– .14½	24s	.17 – .17½
16s	– .15	26s	.18½– .19

COMBED PEELER (Average Quality)

TWO-PLY — (Knitting Twist) Cones

20s-2	$0.23½	50s-2	$0.32
30s-2	– .26	60s-2	– .34½
40s-2	– .27½	80s-2	– .55

WARPS, SKEINS AND CONES

TWO-PLY — (Warp Twist)

20s-2	$0.24½	50s-2	$0.32½
30s-2	– .27	60s-2	– .35
36s-2	– .27½	70s-2	– .48
40s-2	– .28½	80s-2	– .56

SINGLES

14s	$0.20½	38s	$0.27
20s	– .21	40s	– .28
28s	– .23½	50s	– .31
30s	– .24½	60s	– .33½

MERCERIZED CONES — (Combed, Ungassed)

30s-2	$0.36 $0.37½	60s-2	$0.49 $0.51
40s-2	.40 – .41	80s-2	.74 – .76

Raw Silk

Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Super Grand, 87%	$1.42½	$1.27½	$1.27½
Special Grand, 85%	1.35	1.22½	1.22½
Grand XX, 83%	1.30	1.20	1.20
Special Crack, 81%	1.25	1.17½	1.17½
Crack XX, 78%	1.22½	1.15	1.15
Extra Extra, 73%	1.20	1.12½	1.12½
Best Extra, 68%	1.15	....	....

NATIONAL RAW SILK EXCHANGE

	April 1	March 1	For Month High	For Month Low	Mar. 29, 1932
March	....	1.14	1.21	1.14	....
April	1.12	1.15	1.22	1.12	1.46
May	1.11	1.15	1.22	1.11	1.46
June	1.10	1.14	1.21	1.11	1.47
July	1.10	1.14	1.21	1.10	1.46
August	1.10	1.15	1.22	1.10	1.47
September	1.10	1.15	1.22	1.10	1.47
October	1.10	1.14	1.22	1.10	1.47
November	1.11	....	....	....	1.48

Silk Yarns and Waste

Hosiery tram 5 thd, Japan, 85%	$1.95
Hosiery tram, crack XX 78%	1.80
60/2 spun silk	2.50

WASTE

Silk: K.K. Triple X	$0.55
Rayon: thread	$0.07–$0.10

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne.	$0.19–$0.19½	⅜ blood...	$0.19–$0.19½
Fine clthg.	.13– .14	¼ blood...	.18½– .19
½ blood...	.19 – .19½		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.42 –$0.44
California, Northern	.37 – .38

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.45 –$0.46
Staple ½ bld.	.43 – .45
Fine and fine medium (original bag)	.41 – .43
⅜ blood	.38 – .40
½ blood	.36 – .38

PULLED — EASTERN (CLEAN BASIS)

A.A.	$0.48 –$0.49	B-Super..	$0.36 –$0.41
A-Super...	.42 – .44	C-Super..	.34 – .35

CARPET WOOL

Aleppo (clean)	$0.16–$0.18
Sining	.11½– .12
China filling (clean)	.15 – .17

Tops and Noils

TOPS — BOSTON

Fine (64-66s)	$0.60 –$0.62
Half-blood (60-62s)	.56 – .57
Aver. ¾ blood (56s)	.52 – .53
½ blood (50s)	.48 – .50

NEW YORK TOP FUTURES

	Closed April 1	For Month High	For Month Low	Closed March 1
April	52.00	54.70	48.10	48.10
May	52.10	54.80	48.30	48.30
June	52.80	54.90	48.40	48.40
September	53.60	55.80	48.90	48.90
December	54.20	56.80	49.30	49.30

TOPS — BRADFORD, ENG. (May 21)

Fine (64s)	22½d	¾ bld. (56s)	17 d
½ bld. (60s)	21 d	½ bld. (50s)	11½d

NOILS—BOSTON

Fine	$0.33 –$0.35	¾ bld.	$0.29 –$0.30
Half-bld.	.31 – .33	½ bld.	.26 – .28

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s..	$0.67 –$0.68	2-36s 58s..	$0.87½–$0.92
2-30s 46s..	.75 – .77½	2-40s 60s..	.92½– .97½
2-30s mixes	1.00 – 1.02½	2-50s 64s..	1.05 – 1.10

ENGLISH SYSTEM KNITTING

2-20s 44s..	$0.57½–$0.60	2-20s 60s...	$0.73–$0.77
2-20s 50s..	.65 – .67½	2-20s 64s...	80– .85

FRENCH SYSTEM

1-26s 64s..	$0.75 –$0.80	2-40s 64s Zephyrs	$1.00 –$1.05
1-30s 64s warp....	.90 – .92½	2-50s 66s..	1.10 – 1.10

Domestic Rayon

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.00	150	24–40	$0.50
75	30	.90	150	60	.55
100	40	.65	300	44	.42
125	36	.55			

NITRO-CELLULOSE PROCESS

Denier	First Qual.	Denier	First Qual.
75	$0.90–$1.00	150	$0.65
100	.75– .80	175	.60– .65

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.10–$1.15	100	$0.95–$1.00
60	1.05	120–125	.90
75	1.00– 1.05	150	.85– .90

CUPRAMMONIUM PROCESS

Denier	Filament	Price	Denier	Filament	Price
25	24	....	100	75	$0.80
75	60	$0.95	150	112	.70